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Final Rule

Third Third Waste Volumes, Characteristics, and Required and Available Treatment Capacity

Volume II

CHAPTER 3

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THIRD THIRD WASTE VOLUMES, CHARACTERISTICS, AND REQUIRED AND AVAILABLE TREATMENT CAPACITY

Volume II

CHAPTER 3

U.S. Environmental Protection Agency
Office of Solid Waste
401 M Street, S.W.
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3. Waste Code Specific Capacity Analyses for Third Third Promulgated Wastes

This section presents the results of the analyses of required capacity for each alternative technology on a waste code-specific basis for the wastes in the final Third Third rule. Tables 3-1 through 3-236, located later in this section, present waste code-specific analyses of the alternative capacity required by the wastes in the proposed Third Third rule. The capacity analysis for soils contaminated with Third Third promulgated wastes is presented in section 3.8 and waste-code specific analyses are presented in Tables 3-239 through 3-314. An index (Exhibit 3-1) of waste codes listed alphabetically provides the appropriate Table number, chapter section, and page number for waste codes relevant to today's final rule. Tables are not provided for waste codes with zero volumes of waste. These zero quantity waste codes are also listed alphabetically in Exhibit 3-1 indicating their status.

The capacity analyses referenced in this section are based primarily on data from the TSDR Survey. However, as discussed in Section 2.1.1 of this document, supplemental data sources were relied upon in some cases. The data set referred to in this section includes the TSDR Survey data as well as these supplemental data sources.

The land disposed waste volume data from the TSDR Survey were sorted by waste code and type of alternative treatment/recovery required. This information was then combined and summarized to create technology-specific and waste code-specific capacity analysis tables for the Third Third promulgated wastes. The raw data used to develop the capacity analysis tables are included in Appendices D and E. The Analysis of Required Capacity Data for the Third Third Wastes Final Rule in the docket contains the amount of required capacity for Third Third promulgated wastes for each technology.

In a limited number of instances, it was not feasible to assign waste streams directly to the BDAT; however, these wastes were assigned to equivalent alternative technologies. In these cases, the waste code discussions explain why the waste stream could not be assigned directly to BDAT and how the stream was handled. (Subsection 4.1.2 explains the methodology used to assign alternative technologies.)

This subsection also presents discussions for each waste code in the proposed Third Third rule requiring alternative treatment. Each discussion contains a description of the waste, identifies the hazardous constituents for which it is listed, and identifies the BDAT used to set the treatment standard.

The TSDR Survey indicated volumes of mixtures greater than one million being land disposed. These mixtures contain P and U waste codes. Based on discussions with the facility, EPA believes that these waste streams contain a very small volume of P and U waste codes that have been mixed with other wastes. EPA has estimated that the actual amount of P and U wastes that will need alternative treatment capacity is small and has developed an estimate of P and U volumes based on discussions with the facility. In particular, EPA developed estimates for the following P and U waste codes: P020, P069, U002, U007, U008, U012, U031, U044, U055, U070, U080, U105, U106, U122, U133, U138, U151, U157, U162, U169, U188, U192, U197, U211, and U226. Discussions on the basis for developing estimates for these wastes is provided in the section for each waste code.

In the proposed rule, EPA requested comment concerning the volumes of deepwell-injected P and U wastes, and EPA's assumption that volumes did not exceed 100,000 gallons at the point of generation. Several commenters responded that this estimate was inaccurate, and that several P and U waste streams were much larger as generated. EPA contacted these commenters (phone logs are recorded in Appendix L) to verify the volumes being generated. From these discussions, it was determined that these waste streams were not hazardous wastes due to the mixture rule exception (Section 261.3(a)(2)(iv)). These waste streams, therefore, do not require alternative treatment capacity. In addition, the large volume of the streams did not reflect the volume of P and U wastes in the stream -- which resulted from *de minimis* losses -- but rather the total wastewater volume. One other commenter disagreed with EPA's methodology but was unable to provide any hard data. EPA recognizes that P and U waste streams may be generated in excess of 100,000 gallons in certain instances. However, EPA believes that these situations are unique and has not changed the methodology for today's final rule.

In some cases wastes have not been assigned to their BDAT technology but instead have been assigned to technologies EPA believes will be able to achieve the BDAT treatment standard. These technologies are referred to in this document as equivalent BDATs. For example, where the BDAT is based on incineration, but EPA has not precluded reuse as fuel, reuse as fuel was considered an equivalent BDAT for these wastes.

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[1] Waste codes with zero quantities generated will have no tables and are designated as N/A.

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[a] Ignitables
[b] Reactives and oxidizers
[c] Acids and alkalines
[d] Other corrosives
[e] Cyanides
[f] Sulfides
[g] Explosives, reactives
[h] Cadmium
[i] Cadmium batteries
[j] Lead acid batteries
[k] Cyanides
[l] Treated cyanides
[m] Chromium

3.1 Characteristic Wastes

3.1.1 D001 Ignitable Wastes

RCRA hazardous wastes classified as D001 are hazardous because of the characteristic of ignitability. Paraphrasing 40 CFR 261.21, a waste is ignitable if it can be categorized as: (1) a liquid with a flash point less than 140°F; (2) an ignitable compressed gas; (3) a nonliquid and is capable of causing a fire through friction, absorption of moisture, or spontaneous chemical changes and, when ignited, burns vigorously and persistently; or (4) an oxidizer. EPA has identified separate BDAT technologies for the D001 waste categories. EPA has determined that the D001 ignitable liquids subcategory should be divided into three treatability groups: (1) D001 ignitable liquid nonwastewaters with a TOC content greater or equal to ten percent, (2) D001 ignitable liquid nonwastewaters with a TOC content of less than ten percent, and (3) D001 ignitable liquid wastewaters. EPA is promulgating incineration, fuel substitution, or recovery as methods of treatment for ignitable liquid nonwastewaters with a TOC content greater than or equal to ten percent. For ignitable liquid nonwastewaters with a TOC content of less than ten percent, EPA is promulgating deactivation as the method of treatment. EPA is also promulgating deactivation as the method of treatment for D001 ignitable liquid wastewaters.

In the proposed rule, EPA proposed incineration, recovery or reuse as fuel as the methods of treatment for D001 liquids mixed with sludges and solids. Based on information available for the proposed rule, EPA had identified insufficient incineration capacity for these wastes; consequently EPA proposed a national capacity variance. EPA requested comments on the availability of capacity for incineration of D001 liquids mixed with sludges and solids. Several commenters stated that adequate capacity exists to treat D001 liquids mixed with sludges and solids, and therefore that no capacity variance should be granted for these wastes. Based on the review of available sludges and solids treatment capacity data for incineration and cement kilns, EPA has determined that 41 million gallons of capacity is available to treat the 12.4 million gallons of surface-disposed D001 liquids mixed with sludges and solids. Therefore, EPA is not granting a national capacity variance for these wastes.

EPA is promulgating deactivation as the method of treatment for D001 ignitable gases. EPA is also promulgating deactivation as the method of treatment for ignitable reactive D001 wastes and D001 oxidizers.

As shown in Tables 3-1 and 3-2, most of the D001 wastes identified from the data set as requiring alternative treatment have been assigned to one of the BDAT technologies based on the physical form of the waste and whether it was a wastewater or nonwastewater. One waste stream reported in the data set was a mixed D001 and D003 (reactive) waste. EPA believes that this waste stream will require chemical oxidation followed by chemical precipitation in order to meet all of the applicable treatment standards. Another waste stream was mixed with a waste code requiring vitrification and therefore was sent to that technology.

Based on the data set, EPA has identified that adequate treatment capacity exists for all D001 wastes (e.g., ignitable liquids, ignitable compressed gases, and oxidizers) requiring alternative treatment and is therefore not granting a capacity variance for these wastes.

For D001 ignitable wastes being underground injected, EP has identified that there is adequate alternative treatment capacity available. EPA, therefore, is not granting a capacity variance to D001 ignitable wastes being deepwell injected.

Table 3-1 Capacity Analysis for D001a (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	6,897,000	6,897,000
Combustion of Sludges	6,946,818	0
Combustion of Solids	5,779,183	0
Overall Total:	19,623,001	6,897,000

D001a is D001 ignitables

Table 3-2 Capacity Analysis for D001b (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Oxidations Followed by Chromium Reduction and Chemical Precipitation	31,000	0
Subtotals for BDAT:	31,000	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Chemical Oxidation Followed by Chemical Precipitation	560	0
Vitrification	655	0
Subtotals for non-BDAT:	1,215	0
Overall Total:	32,215	0

D001b is D001 reactives, oxidizers

3.1.2 D002 Corrosive Wastes

RCRA hazardous wastes classified as D002 are hazardous because of the characteristic of corrosivity. Paraphrasing 40 CFR 261.22, a waste is corrosive if it can be classified as: (1) an aqueous waste with a pH less than or equal to 2.0, or greater than or equal to 12.5, or (2) a liquid that can corrode steel at a specified rate and temperature.

For D002 wastewaters and nonwastewaters with a pH less than or equal to 2.0 or greater than or equal to 12.5, EPA has identified three treatability groups: acids, alkalines, and other corrosives. For the acid and alkaline subcategories, EPA is promulgating deactivation, which includes neutralization, as the method of treatment. Several mixed D002 waste streams were reported in the data set. EPA has identified that additional treatment will be required after the BDAT treatment to meet all of the applicable treatment standards for these waste streams. Table 3-3 identifies the volumes of D002 acid and alkaline wastes deepwell-injected and surface-disposed. EPA believes sufficient neutralization capacity exists for acid and alkaline D002 wastes that are surface disposed; therefore, EPA is not granting a national capacity variance for them.

For the D002 other corrosives category, EPA is promulgating deactivation as the method of treatment. These wastes can be deactivated using chemical reagents. In addition, EPA believes that these wastes are generated in low volumes. Therefore, EPA is not granting a national capacity variance for these wastes that are surface disposed.

For D002 wastes being deepwell-injected, EPA has identified that inadequate alternative capacity is available to treat these wastes. As indicated in Appendix VI of today's rule, EPA has identified several technologies for treating D002 wastewaters and nonwastewaters. The aggregate capacity of these technologies is inadequate for treating D002 wastewaters and nonwastewaters.

In the proposed rule, EPA proposed to grant a capacity variance for deepwell-injected D002 wastewaters. During the public comment period, several commenters stated that D002 nonwastewaters were also injected. EPA has reevaluated the analysis for D002 wastes and agrees, and is therefore granting a national capacity variance for deepwell-injected D002 wastewaters and nonwastewaters. This variance, however, does not apply to corrosives regulated in the California list rulemaking. These California list corrosives are subject to the treatment standards promulgated in the California list rulemaking, on August 8, 1990.

Table 3-3 Capacity Analysis for D002a (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	24,000
Neutralization	21,975,340	1,638,365,360
Subtotals for BDAT:	21,975,340	1,638,389,360
Quantities Included in Mixtures and Assigned to Additional Technology:		
Alkaline Chlorination	0	62,400
Chemical Oxidation Followed by Chemical Precipitation	210,758	89,242,840
Chemical Oxidations Followed by Chromium Reduction and Chemical Precipitation	610,976	97,601,820
Chemical Precipitation	1,021,257	7,001,533
Chromium Reduction and Chemical Precipitation	1,198,275	36,077,869
Combustion of Liquids	37,478	104,880
Combustion of Sludges	26,192	0
Combustion of Solids	162,640	0
Mercury Retorting	38,262	0
Secondary Smelting	9,070	0
Stabilization	65,752	0
Vitrification	157,264	0
Wet Air Oxidation (only)	0	55,990,320
Subtotals for non-BDAT:	3,537,924	286,081,662
Overall Total:	25,513,264	1,924,471,022

D002a is D002 acids and alkalines

3.1.3 D003 Reactive Wastes

RCRA hazardous wastes classified as D003 are hazardous because of the characteristic of reactivity. Paraphrasing 40 CFR 261.23, a waste is reactive if it can be classified as: (1) unstable and readily undergoes violent changes without detonating, (2) a waste that reacts violently with water, (3) a potentially explosive mixture with water, (4) a waste that generates a toxic gas when mixed with water, (5) a cyanide- or sulfide-bearing waste which under certain conditions can generate toxic gases, (6) a waste capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement, (7) a waste readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure, or (8) a Department of Transportation (DOT) forbidden explosive Class A explosive, or a Class B explosive.

For D003 wastes, EPA has identified five treatability groups: (1) reactive cyanides, (2) explosives, (3) water reactives, (4) reactive sulfides, and (5) other reactives. These waste volumes surface-disposed and deepwell-injected are presented in Tables 3-4 through 3-6. The TSDR survey did not distinguish explosives, water reactives, and other reactives. Therefore, these three categories have been grouped together in Table 3-6 for the purpose of the capacity analysis. Several mixed D003 waste streams were reported in the data set. EPA has identified that additional treatment will be required after the BDAT treatment to meet all of the applicable treatment standards for these waste streams.

For D003 reactive cyanides, EPA is promulgating concentration standards based on alkaline chlorination, wet-air oxidation, or electrolytic-oxidation for both wastewaters and nonwastewaters. Although reactive cyanides account for the majority of the quantity of D003 generated, EPA believes that these wastes are already restricted from landfills by existing regulations (40 CFR Part 264.312, 265.312). Consequently, EPA has identified that sufficient capacity exists for the volumes of surface-disposed D003 cyanide reactive wastes and is not granting a national capacity variance for them.

For D003 explosive, water-reactive, and other reactive wastes, EPA is promulgating deactivation as the method of treatment. For the capacity analysis, chemical oxidation followed by chrome reduction and chemical precipitation was assumed to be an equivalent technology. D003 explosive wastes are already subject to special requirements prior to land disposal by existing regulations, and are burned and/or detonated openly. EPA has identified that adequate capacity does exist for the surface-disposed D003 explosive, water-reactive, and other reactive wastes. Therefore, EPA is not granting a national capacity variance for these wastes being surface-disposed.

For D003 reactive sulfides, EPA is promulgating deactivation as a method of treatment, which includes chemical oxidation. EPA believes sufficient capacity exists for the volume of surface-disposed D003 sulfide wastes and is not granting a national capacity variance for them.

EPA has found that adequate alternative treatment capacity is not available for D003 reactive cyanides, sulfides, and D003 explosives and reactives (including both water reactives and other reactives) being deepwell-injected. For D003 reactive sulfides, D003 explosives, D003 water reactives, and D003 other reactives, EPA is promulgating deactivation as the method of treatment. For the capacity analysis, EPA assigned all volumes to chemical oxidation followed by chemical precipitation. As indicated in Appendix VI, EPA has identified other technologies for treating these wastes. The aggregate capacity of the additional technologies is still insufficient for treating these D003 wastes. EPA is therefore granting a two-year capacity variance for these wastes being deepwell-injected. In the proposed rule, EPA proposed to grant a capacity variance for deepwell-injected D003 wastewaters. During the public comment period, several commenters stated that D003 nonwastewaters were also injected. EPA has reevaluated the analysis for D003 wastes and agrees, and is therefore granting a national capacity variance for deepwell-injected D003 wastewaters and nonwastewaters.

Table 3-4 Capacity Analysis for D003a (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Alkaline Chlorination	151,680	47,574,160
Subtotals for BDAT:	151,680	47,574,160
Quantities Included in Mixtures and Assigned to Additional Technology:		
Combustion of Liquids	1,180,422	7,004,320
Vitrification	23,380	0
Subtotals for non-BDAT:	1,203,802	7,004,320
Overall Total:	1,355,482	54,578,480

D003a is D003 cyanides

Table 3-5 Capacity Analysis for D003b (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Oxidation Followed by Chemical Precipitation	6,677,720	1,593,538,840
Overall Total:	6,677,720	1,593,538,840

D003b is D003 sulfides

Table 3-6 Capacity Analysis for D003c (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Oxidations Followed by Chromium Reduction and Chemical Precipitation	1,089,444	97,604,340
Subtotals for BDAT:	1,089,444	97,604,340
Quantities Included in Mixtures and Assigned to Additional Technology:		
Combustion of Sludges	85,404	0
Subtotals for non-BDAT:	85,404	C
Overall Total:	1,174,848	97,604,340

D003c is D003 reactives

3.1.4 EP Toxic Pesticides D012-D017

EPA grouped these waste codes together because they exhibit the characteristic of EP toxicity for constituents that are (or have been) primarily used as pesticides.

D012 and D015

RCRA hazardous wastes classified as D012 and D015 are hazardous because of the characteristic of EP toxicity for endrin and toxaphene, respectively. Endrin and toxaphene are halogenated pesticides that have the structural classification known as chlorinated norbornane and nonbornene derivatives. For the wastewater forms of these wastes, EPA is promulgating incineration or biological treatment as methods of treatment. For nonwastewaters, EPA is promulgating concentration standards based on incineration.

As shown in Tables 3-7 and 3-10, all of the surface-disposed and deepwell-injected D012 and D015 wastes identified from the data set as requiring alternative treatment have been assigned to the BDAT technology based on the physical form of the waste and whether it was a wastewater or nonwastewater.

Based on the data set, EPA had identified that adequate treatment capacity exists for the surface-disposed and deepwell-injected D012 and D015 wastes requiring alternative treatment. Therefore, EPA is not granting a national capacity variance for these deepwell-injected and surface-disposed wastes.

D013

RCRA hazardous wastes classified as D013 are hazardous because of the characteristic of EP toxicity for lindane. For wastewaters, EPA is promulgating incineration or carbon adsorption as methods of treatment. For nonwastewaters, EPA is promulgating concentration standards based on incineration. As shown in Table 3-8, the surface-disposed and the deepwell-injected D013 wastes identified from the data set as requiring alternative treatment have been assigned to the BDAT based on the physical form of the waste.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed and deepwell-injected D013 wastes requiring alternative treatment. Therefore, EPA is not granting a national capacity variance for either deepwell-injected or surface-disposed D013 wastes.

D014

RCRA hazardous wastes classified as D014 are hazardous because of the characteristic of EP toxicity for methoxychlor. Methoxychlor is a halogenated pesticide classified as a chlorinated diphenyl compound. For this waste, EPA is promulgating incineration or wet-air oxidation as methods of treatment for wastewaters, and concentration standards based on incineration for nonwastewaters.

As shown in Table 3-9, all of the surface-disposed and deepwell-injected D014 wastes identified from the data set as requiring alternative treatment have been assigned to the BDAT technology based on the physical form of the waste and whether the waste was a wastewater or nonwastewater.

Based on the data set, EPA had identified that adequate treatment capacity exists for the surface-disposed and deepwell-injected D014 wastes requiring alternative treatment. Therefore, EPA is not granting a national capacity variance for this waste.

D016 and D017

RCRA hazardous wastes D016 and D017 are classified as chlorophenoxy-carboxylic acids. D016 and D017 are hazardous because of the characteristic of EP toxicity for 2,4-dichlorophenoxyacetic acid (2,4-D) and 2,4,5-trichlorophenoxypropionic acid (2,4,5-TP), respectively.

For wastewaters, EPA is promulgating incineration or chemical oxidation as methods of treatment. For nonwastewaters, EPA is promulgating concentration standards based on incineration.

As shown in Tables 3-11 and 3-12, all of the surface-disposed and deepwell-injected D016 and D017 wastes identified from the data set as requiring alternative treatment have been assigned to one of the BDAT technologies based on the physical form of the waste and whether the waste was a wastewater or nonwastewater.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed and deepwell-injected D016 and D017 wastes requiring alternative treatment. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-7 Capacity Analysis for D012 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	2,333,333
Incineration of Solids	452,131	0
Overall Total:	452,131	2,333,333

Table 3-8 Capacity Analysis for D013 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	2,333,333
Incineration of Solids	442,885	0
Overall Total:	442,885	2,333,333

Table 3-9 Capacity Analysis for D014 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	1,920,000	2,390,213
Incineration of Solids	10,403	0
Overall Total:	1,930,403	2,390,213

Table 3-10 Capacity Analysis for D015 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	2,333,333
Incineration of Solids	1,246	0
Overall Total:	1,246	2,333,333

Table 3-11 Capacity Analysis for D016 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	2,333,333
Incineration of Solids	223,613	0
Overall Total:	223,613	2,333,333

Table 3-12 Capacity Analysis for D017 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	2,333,333
Incineration of Solids	441,973	0
Overall Total:	441,973	2,333,333

3.2 Metal Wastes

This group includes arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, thallium, and vanadium wastes.

3.2.1 Arsenic Wastes

D004, K031, K084, K101, K102, P010, P011, P012, P036, P038, and U136

RCRA hazardous wastes D004 (EP toxic for arsenic), K031 (by-product salts generated in the production of MSMA and cacodylic acid), K084 (wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds), K101 (distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds), K102 (residues from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds), P010 (arsenic acid), P011 (arsenic (V) oxide), P012 (arsenic (III) oxide), P036 (dichlorophenyl-arsine), P038 (diethylarsine), and U136 (cacodylic acid) are hazardous wastes containing arsenic. The P wastes are listed as hazardous for acute toxicity. The U wastes are listed as hazardous for toxicity. Concentration standards were previously set for K101 and K102 wastes in the First Third final rule. At that time, BDAT was incineration for organic nonwastewaters and stabilization for metallic nonwastewaters. For wastewaters, the BDAT was chemical precipitation and filtration. No standards were set for arsenic content. In today's rule, EPA is promulgating concentration standards for all arsenic nonwastewaters based on the performance of vitrification. (See preamble for more detail on the standards and capacity analysis for arsenic nonwastewaters.) For wastewaters, EPA is promulgating concentration standards based on chemical precipitation; for K101 and K102, new concentration standards are being promulgated for this technology. EPA has evidence that the vitrification standard for arsenic will effectively treat both the organics and metals in the nonwastewater forms of K101 and K102 wastes.

As shown in Table 3-13 through and 3-18, all of the arsenic wastes identified in the data set as requiring alternative treatment have been assigned to the BDAT based on the physical form of the wastes. Treatment of these wastes does not normally require additional treatment (e.g., chemical oxidation followed by chemical precipitation). However, some arsenic wastewaters and nonwastewaters were found to be mixed with other wastes. For these wastes, EPA has identified that additional treatment steps are required in order to meet all of the applicable treatment standards.

EPA's analysis of the data set has revealed insufficient alternative treatment capacity for surface-disposed D004, K031, K084, P010, P011, and P012 nonwastewaters. Therefore, EPA is granting a national capacity variance for the nonwastewater forms of these wastes. For D004, K031, K084, P010, P011, and P012 wastewaters, both deepwell-injected and surface-disposed, sufficient alternative treatment capacity exists, and therefore, EPA is not granting a national capacity variance for the wastewater forms of these wastes.

Data indicate that K101, K102, P036, P038, and U136 wastes are not being land disposed but are being generated. Because no capacity exists for the proposed technology standard of vitrification, EPA is granting K101, K102, P036, P038, and U136 nonwastewaters a national capacity variance. For wastewaters, adequate alternative treatment capacity exists, and therefore, EPA is not granting a national capacity variance for the wastewater forms of these wastes.

Table 3-13 Capacity Analysis for D004 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Precipitation	554,868	9,789,360
Vitrification	12,072,431	150,796
Subtotals for BDAT:	12,627,299	9,940,156
Quantities Included in Mixtures and Assigned to Additional Technology:		
Biological Treatment	204	0
Chemical Oxidation Followed by Chemical Precipitation	0	640
Chromium Reduction and Chemical Precipitation	61,918	16,740
Combustion of Liquids	659	48,160
Combustion of Sludges	65,555	0
Combustion of Solids	57,759	0
Incineration of Sludges	6	0
Subtotals for non-BDAT:	186,101	65,540
Overall Total:	12,813,400	10,005,696

Table 3-14 Capacity Analysis for K031 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Precipitation	0	1,047,360
Vitrification	620,258	10,474
Overall Total:	620,258	1,057,834

Table 3-15 Capacity Analysis for K084 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Vitrification	213,912	0
Overall Total:	213,912	0

Table 3-16 Capacity Analysis for P010 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Vitrification	1,117	0
Overall Total:	1,117	0

Table 3-17 Capacity Analysis for P011 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chromium Reduction and Chemical Precipitation	0	3,600
Vitrification	2,048	72
Overall Total:	2,048	3,672

Table 3-18 Capacity Analysis for P012 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Vitrification	3,228	0
Subtotals for BDAT:	3,228	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Incineration of Sludges	31	0
Subtotals for non-BDAT:	31	0
Overall Total:	3,259	0

3.2.2 Barium Wastes D005 and P013

RCRA hazardous wastes classified as D005 are hazardous because of the characteristic of EP toxicity for barium. RCRA hazardous waste P013 (barium cyanide) is listed as hazardous for acute toxicity. EPA is promulgating concentration standards based on chemical precipitation for D005 and P013 wastewaters. For D005 and P013 nonwastewaters, EPA is promulgating concentration standards based on stabilization. For barium nonwastewaters with high levels of organics, EPA is requiring that these wastes be incinerated prior to stabilization. Cyanide treatment standards based on alkaline chlorination for P013 wastewaters and electrolytic oxidation followed by alkaline chlorination for P013 nonwastewaters were originally set in the Second Third final rule.

As shown in Table 3-19, most D005 barium wastes requiring alternative treatment have been assigned to their BDAT based on the physical form of the waste and whether the waste was a wastewater or nonwastewater. However, D005 wastewaters and nonwastewaters were found to be mixed with other wastes. For these wastes, EPA has identified that additional treatment steps will be required in order to meet all applicable treatment standards.

Analysis of the data set revealed no deepwell-injected or surface-disposed volumes of P013 requiring alternative treatment capacity. Therefore, EPA is not granting capacity a variance for these wastes.

EPA's analysis indicated that sufficient alternative treatment capacity exists for D005 deepwell-injected and surface-disposed wastewaters and nonwastewaters and therefore is not granting a capacity variance for these wastes.

Table 3-19 Capacity Analysis for D005 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Precipitation	8,426,348	276,420
Incineration of Liquids	33,705	0
Incineration of Sludges	23,545	0
Incineration of Solids	64,858	0
Stabilization of Incinerator Ash	11,824	0
Stabilization of Scrubber Water Treatment Sludge	7,158	0
Stabilization of Wastewater Treatment Sludge	6,325,600	14,723
Subtotals for BDAT:	14,893,038	291,143
Quantities Included in Mixtures and Assigned to Additional Technology:		
Biological Treatment	204	0
Chemical Oxidation Followed by Chemical Precipitation	3,078	0
Chemical Oxidations Followed by Chromium Reduction and Chemical Precipitation	54,540	0
Chromium Reduction and Chemical Precipitation	187,563	961,968
Mercury Retorting	34,803	0
Secondary Smelting	7,680	0
Stabilization of Retort Slag	34,632	0
Vitrification	1,206,300	14
Subtotals for non-BDAT:	1,528,800	961,982
Overall Total:	16,421,838	1,253,125

3.2.3 Cadmium Wastes D006

RCRA hazardous wastes classified as D006 are hazardous because of the characteristic of EP toxicity for cadmium. EPA is grouping all D006 wastes into one of three treatability groups: cadmium-containing batteries, wastewaters, or nonwastewaters. EPA is promulgating thermal recovery as the method of treatment for cadmium batteries, and concentration standards based on chemical precipitation for cadmium wastewaters. For D006 nonwastewaters, EPA is promulgating concentration standards based on stabilization or metal recovery.

As shown in Table 3-20 and 3-21, the D006 cadmium wastes identified from the data set as requiring alternative treatment have been assigned to various treatment technologies. Although D006 wastes will undergo the assigned BDAT method of treatment, EPA believes that many mixed D006 waste streams will require additional treatment in order to meet all of the applicable treatment standards. For example, D006 wastewaters that also contain chromium-bearing wastes will require chromium reduction in addition to chemical precipitation.

EPA has identified that sufficient capacity exists to treat the surface-disposed and deepwell injected cadmium wastewaters and nonwastewaters. Therefore, EPA is not granting a national capacity variance for these wastes. EPA proposed to grant a national capacity variance for D006 cadmium batteries in the proposed rule due to lack of identified recovery capacity. Through contacts made with facilities identified during the public comment period, EPA has determined that sufficient capacity exists for D006 cadmium batteries currently land disposed and, therefore, is not granting a national capacity variance for D006 cadmium batteries.

Table 3-20 Capacity Analysis for D006a (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Precipitation	1,341,262	128,900
Stabilization	9,867,329	0
Stabilization of Incinerator Ash	233,845	17
Stabilization of Wastewater Treatment Sludge	574,809	15,847
Subtotals for BDAT:	12,017,245	144,764
Quantities Included in Mixtures and Assigned to Additional Technology:		
Chemical Oxidation Followed by Chemical Precipitation	657	400,000
Chemical Oxidations Followed by Chromium Reduction and Chemical Precipitation	68,569	4,980
Chromium Reduction and Chemical Precipitation	1,400,950	1,033,388
Combustion of Liquids	59,320	10,920
Combustion of Sludges	135,211	0
Combustion of Solids	130,954	0
Mercury Retorting	49,489	493
Secondary Smelting	565,789	0
Stabilization of Retort Slag	45,802	657
Stabilization of Scrubber Water Treatment Sludge	23,131	17
Vitrification	1,753,273	5,441
Subtotals for non-BDAT:	4,233,145	1,455,896
Overall Total:	16,250,390	1,600,660

D006a is D006 cadmium non-batteries

Table 3-21 Capacity Analysis for D006b (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Thermal recovery of cadmium batteries	14,278	0
Overall Total:	14,278	0

D006b is D006 cadmium batteries

3.2.4 Chromium Wastes D007 and U032

RCRA hazardous wastes classified as D007 are hazardous because of the characteristic of EP toxicity for chromium. RCRA hazardous waste U032 (calcium chromate) is listed as hazardous for toxicity. For D007 and U032 wastewaters, EPA is promulgating concentration standards based on chromium reduction followed by chemical precipitation. For D007 and U032 nonwastewaters, EPA is promulgating concentration standards based on stabilization.

As shown in Tables 3-22 and 3-23, the D007 and U032 wastes identified from the data set as requiring alternative treatment have been assigned to their BDATs. However, EPA believes that many mixed D007 waste streams will require additional treatment in order to meet all of the applicable treatment standards. For example, D007 waste streams that also contain organics will require incineration followed by stabilization of the incinerator ash and scrubber water treatment sludge.

Based on the analysis of the data set, EPA has identified that adequate treatment capacity exists for the volume of surface-disposed D007 wastewaters and nonwastewaters, and deepwell-injected and surface-disposed U032 wastewaters and nonwastewaters. Therefore, EPA is not granting capacity variances for these wastes. However, EPA does not believe that adequate treatment capacity exists for the volume of deepwell-injected D007 wastes requiring alternative treatment. Therefore, EPA is granting a two-year capacity variance for deepwell-injected D007 wastes. In the proposed rule, EPA proposed to grant deepwell-injected D007 wastewaters a national capacity variance. During the public comment period, several commenters stated that D007 nonwastewaters were also being injected. EPA has reevaluated the analysis for D007 wastes and agrees, and is therefore granting a national capacity variance for deepwell-injected D007 wastewaters and nonwastewaters.

Table 3-22 Capacity Analysis for D007a (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chromium Reduction and Chemical Precipitation	59,344,986	198,233,898
Stabilization	11,316,562	0
Stabilization of Wastewater Treatment Sludge	44,479,848	2,475,797
Subtotals for BDAT:	115,141,396	200,709,695
Quantities Included in Mixtures and Assigned to Additional Technology:		
Chemical Oxidation Followed by Chemical Precipitation	0	400,000
Chemical Oxidations Followed by Chromium Reduction and Chemical Precipitation	65,851	5,880
Combustion of Liquids	91,432	31,300
Combustion of Sludges	533,487	0
Combustion of Solids	260,620	0
Incineration of Sludges	6	0
Mercury Retorting	49,600	494
Stabilization of Incinerator Ash	272,685	874
Stabilization of Retort Slag	76,519	658
Stabilization of Scrubber Water Treatment Sludge	31,387	874
Vitrification	1,872,888	5,190
Subtotals for non-BDAT:	3,254,475	445,270
Overall Total:	118,395,871	201,154,965

D007a is D007 chromium

Table 3-23 Capacity Analysis for U032 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chromium Reduction and Chemical Precipitation	101	15,480
Stabilization of Wastewater Treatment Sludge	1,426	235
Overall Total:	1,527	15,715

3.2.5 Lead Wastes D008, P110, U144, U145, U146, K069, and K100

RCRA hazardous wastes classified as D008 are hazardous because of the characteristic of EP toxicity for lead. RCRA hazardous waste P110 (tetraethyl lead) is listed as hazardous for acute toxicity. RCRA hazardous wastes U144 (lead acetate), U145 (lead phosphate), and U146 (lead subacetate) are listed as hazardous for toxicity.

For D008 wastes, EPA is promulgating standards for three categories: nonwastewaters, wastewaters, lead-acid batteries. For D008 nonwastewater lead wastes, EPA is promulgating concentration standards based on stabilization or thermal recovery. For D008 nonwastewaters containing significant concentrations of organics, EPA is requiring that these wastes be incinerated prior to stabilization. For D008 wastewaters, EPA is promulgating concentration standards based on chemical precipitation. EPA believes sufficient capacity exists for surface-disposed D008 wastes. Therefore, EPA is not granting a national capacity variance for D008 wastewaters and nonwastewaters, with the exceptions noted below.

EPA is promulgating thermal recovery as the method of treatment for lead-acid batteries. Secondary lead smelters have stated that they store these wastes in piles prior to recovery. EPA has indicated in a previous rulemaking that the shells surrounding lead-acid batteries are considered to be storage containers (see 47 FR 12318 and 40 CFR 264.314(f)(3)). Therefore, to the extent that lead-acid battery storage meets all the requirements of the LDR storage prohibitions at 40 CFR 268.50, such storage is permissible.

In the proposed rule, EPA solicited comments on the management of D008 lead acid batteries at secondary smelters. EPA also indicated that storage of battery parts in waste piles prior to smelting is a form of land disposal, and as such these staging areas are subject to the statutory prohibitions. During the public comment period, EPA received several comments from the secondary lead smelting industry regarding the storage of battery parts prior to smelting. Several commenters expressed concern that EPA's determination that staging piles are a form of land-disposal could force them to close or operate out of compliance while staging piles are modified to meet requirements for hazardous waste storage. As a result of these comments, EPA contacted several secondary smelters to assess the potential capacity impact of required staging area reconstruction. Because of the large volume of batteries currently processed at smelting facilities whose continued storage operation remains in question, EPA is granting a two-year national capacity variance to D008 lead acid batteries.

For P110, U144, U145, and U146, EPA is promulgating treatment standards based on chemical oxidation followed by chemical precipitation for wastewaters and stabilization for nonwastewaters. For P100, U144, U145, and U146 nonwastewaters containing significant concentrations of organics, EPA is requiring incineration prior to stabilization. U144 and U146 were originally addressed in the Second Third final rule but treatment standards for these wastes were not set. These wastes therefore were subject to the soft hammer requirements.

As shown in Tables 3-24 through 3-28, all of the deepwell-injected and surface-disposed wastewaters and nonwastewaters have been assigned to the BDAT based on the physical form of the waste. EPA has identified that several mixed D008 (low lead concentration) and U144 mixed waste streams will require additional treatment in order to meet all the applicable treatment standards. For example, U144 waste streams that also contain mercury will require mercury retorting.

Analysis of the data set revealed no deepwell-injected volumes nor surface-disposed volumes of P110 or U145 wastes. EPA is therefore not granting a capacity variance for these wastes.

Based on analysis the data set, EPA has identified that sufficient capacity exists for deepwell-injected and surface-disposed D008, U144, and U146 wastes volumes. Therefore, EPA is not granting a national capacity variance for these wastes.

Secondary Lead Smelting Wastes K069

RCRA hazardous waste K069 (emission control dust/sludge from secondary lead smelting) is hazardous waste from secondary lead smelting. In the First Third final rule, EPA proposed, a "No Land Disposal Based on Recycling" standard for K069 non-calcium sulfate nonwastewaters, identifying that this waste could be totally recycled and therefore no longer land disposed. In today's rule, EPA is revoking this standard and replace it with recycling as a method of treatment. In addition, EPA is promulgating a concentration standard based on stabilization for K069 calcium sulfate nonwastewaters, and chemical precipitation for all K069 wastewaters.

As shown in Table 3-26, analysis of the data set revealed a small volume of surface-disposed K069 wastes requiring alternative treatment capacity. However, EPA believes there is sufficient capacity to treat these small volumes of waste. There are no reported volumes of deepwell-disposed K069 wastes requiring alternative treatment capacity. Therefore, EPA is not granting a national capacity variance for K069 wastes.

Secondary Lead Smelting Wastes K100

RCRA hazardous waste K100 (waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting) are hazardous wastes from secondary lead smelting. Treatment standards for K100 wastes were originally scheduled to be promulgated as part of the Third Third rulemaking. However, a treatment standard of "No Land Disposal Based on No Generation" for K100 nonwastewaters was promulgated in the First Third final rule and subsequently revised in the Second Third final rule to be applicable only to "Nonwastewater forms of these wastes generated by the process described in the listing description and disposed after August 17, 1988, and not generated in the course of treating wastewater forms of these wastes [Based on Non Generation]".

Today, EPA is revoking the "No Land Disposal Based on No Generation" standard for nonwastewaters and replacing it with a concentration standard based on stabilization. In addition, EPA is today promulgating a concentration based standard for wastewaters based on chemical precipitation.

Analysis of the data set revealed no deepwell-injected or surface-disposed volumes of K100 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-24 Capacity Analysis for D008a (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Oxidation Followed by Chemical Precipitation	0	400,000
Chemical Precipitation	12,124,068	2,206,073
Secondary Smelting	499,944	0
Stabilization	49,494,459	22,061
Subtotals for BDAT:	62,118,471	2,628,134
Quantities Included in Mixtures and Assigned to Additional Technology:		
Chemical Oxidations Followed by Chromium Reduction and Chemical Precipitation	0	40,020
Chromium Reduction and Chemical Precipitation	3,053,865	1,021,185
Combustion of Liquids	223,823	10,380
Combustion of Sludges	459,209	0
Combustion of Solids	300,133	0
Incineration of Sludges	3	0
Mercury Retorting	200,088	1,195
Stabilization of Incinerator Ash	275,594	10
Stabilization of Retort Slag	1,333,835	2,060
Stabilization of Scrubber Water Treatment Sludge	213,625	10
Stabilization of Wastewater Treatment Sludge	2,128,898	31,931
Vitrification	2,161,060	10,204
Subtotals for non-BDAT:	10,350,133	1,116,995
Overall Total:	72,468,604	3,745,129

D008a is D008 lead non-batteries

Table 3-25 Capacity Analysis for D008b (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Secondary Smelting	573,479	0
Overall Total:	573,479	0

D008b is D008 lead acid batteries

Table 3-26 Capacity Analysis for K069 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Stabilization	41	0
Overall Total:	41	0

Table 3-27 Capacity Analysis for U144 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Sludges	19	0
Combustion of Solids	1,797	0
Stabilization of Incinerator Ash	372	0
Stabilization of Retort Slag	364	0
Subtotals for BDAT:	2,552	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Mercury Retorting	2	0
Vitrification	2	0
Subtotals for non-BDAT:	4	0
Overall Total:	2,556	0

Table 3-28 Capacity Analysis for U146 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovary	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Stabilization	287	0
Overall Total:	287	0

3.2.6 Mercury Wastes D009, K071, K106, P065, P092, and U151

These six wastes are grouped together because they contain mercury as the primary hazardous constituent. EPA is grouping these wastes together in order to simplify the explanation of the chemistry of mercury and the operational treatment principles of technologies for treating the related mercury wastes.

RCRA hazardous wastes classified as D009 are hazardous because of the characteristic of EP toxicity for mercury. RCRA hazardous wastes K071 (brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used), K106 (wastewater treatment sludges from the mercury cell process in chlorine production), P065 (mercury fulminate), P092 (phenylmercury acetate), and U151 (mercury) are other mercury-containing wastes listed as hazardous because of the presence of mercury.

Treatment standards for K071 nonwastewaters were originally promulgated in the First Third rule. In the proposed Third Third rule, EPA proposed to revise the standards for K071 nonwastewaters with a high mercury content. For this high mercury subcategory, EPA proposed roasting or retorting as methods of treatment. For the final rule, EPA is not adopting the proposed revisions to K071 wastes, leaving the promulgated First Third BDAT treatment standards unchanged.

EPA is promulgating concentration standards based on chemical precipitation for D009, K106, and U151 wastewaters. For P065 and P092 wastewaters, EPA is promulgating concentration standards based on chemical oxidation followed by chemical precipitation.

EPA is promulgating two categories for nonwastewaters: (1) low mercury, and (2) high mercury. For the low mercury subcategory, EPA is promulgating concentration standards based on acid leaching and chemical precipitation for D009, K106, P065, and P092, and U151 nonwastewaters; for the high mercury subcategory, EPA is promulgating roasting or retorting as methods of treatment for D009, K106, and U151. For P065 and P092 nonwastewaters high mercury subcategory, EPA is promulgating incineration followed by roasting or retorting as methods of treatment.

Because current data do not provide sufficient information on the volume of nonwastewaters that contain high and low concentrations of mercury, EPA assigned all volumes to the high category. Consequently, no volumes of wastes were assigned to acid leaching followed by chemical precipitation. However, no commercial acid leaching followed by chemical precipitation capacity exists. Therefore EPA is granting all surface-disposed low concentration mercury wastes a two-year national capacity variance.

EPA identified several large volumes of P and U coded wastes reported as deepwell-injected in the TSDR Survey. EPA contacted the firms reporting these large streams to further characterize the generation and current management of these large volumes. Specifically, EPA wanted to determine if these large streams were actually generated as small volumes of hazardous wastes and subsequently mixed with large volumes of other wastes.

A deepwell injected volume of 75 million gallons per year containing U151 was reported in the TSDR Survey. Follow-up conversations with the facility reporting this waste stream indicated that the stream was a mixture containing a small unknown fraction of U151. Based on this information, EPA assumed that 100,000 gallons per year was a reasonable estimate of the volume of U151 generated prior to mixing with other wastes. Because the land disposal restrictions apply to wastes at the point of generation, EPA used the 100,000 gallon per year estimate as the required alternative treatment capacity for the U151 contained in this mixed waste stream. A discussion on this methodology is included in section 3.0.

As shown in Tables 3-29 through 3-32, most of the these wastes identified from the data set as requiring alternative treatment were assigned to their BDAT based on the physical form of the waste and whether the waste was a wastewater or nonwastewater. Several mixed waste streams were assigned to other technologies because of the presence of other wastes. For example, several D009 waste streams that also contained arsenic-bearing wastes were assigned to vitrification. EPA believes that for these waste streams, vitrification will be capable of meeting all of the applicable treatment standards.

Based on analysis of the data set, EPA has identified that adequate treatment capacity exists for the volume of surface-disposed and deepwell-injected D009, K106, P092, and U151 wastewaters requiring alternative treatment. EPA has identified a small amount of commercial mercury retorting capacity (16,000 gallons). There is insufficient mercury retorting capacity for D009, K106, and U151 nonwastewaters. Due to the sporadic generation rate of P wastes from year to year and the small amount of available commercial mercury retorting capacity, EPA is granting all high mercury nonwastewaters a two-year national capacity variance. EPA has also determined that there is insufficient commercial capacity for acid leaching followed by chemical precipitation; therefore, EPA is granting low mercury D009, K106, P065, P092, and U151 nonwastewaters a national capacity variance.

Table 3-29 Capacity Analysis for D009a (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Precipitation	914,117	1,045,600
Mercury Retorting	2,047,161	19,063
Subtotals for BDAT:	2,961,278	1,064,663
Quantities Included in Mixtures and Assigned to Additional Technology:		
Chemical Oxidations Followed by Chromium Reduction and Chemical Precipitation	0	35,040
Chromium Reduction and Chemical Precipitation	35,245	63,717
Incineration of Sludges	3	0
Vitrification	1,080,616	0
Subtotals for non-BDAT:	1,115,864	98,757
Overall Total:	4,077,142	1,163,420

D009a is D009 high concentration mercury

Table 3-30 Capacity Analysis for K106a (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Mercury Retorting	446,236	0
Overall Total:	446,236	0

K106a is K106 high concentration mercury

Table 3-31 Capacity Analysis for P092 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Mercury Retorting	1,776	0
Overall Total:	1,776	0

Table 3-32 Capacity Analysis for U151a (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Precipitation	0	100,000
Mercury Retorting	33,759	0
Overall Total:	33,759	100,000

U151a is U151 high concentration mercury

3.2.7 Selenium Wastes
D010, P103, U204, U205

RCRA hazardous wastes D010 (EP toxic for selenium), P103 (selenourea), P114 (thallium selenite), U204 (selenious acid), and U205 (selenium disulfide) are hazardous wastes containing selenium. The P wastes are listed as hazardous for acute toxicity. The U wastes are listed as hazardous for toxicity.

For selenium nonwastewaters, EPA is promulgating concentration standards based on stabilization. For selenium wastewaters, EPA is promulgating concentration standards based on chemical precipitation. As shown in Table 3-34, all D010 wastes identified in the data set as requiring alternative treatment have been assigned to the BDAT based on the physical form of the waste. The BDAT for these wastes does not normally require treatment steps (e.g., chemical oxidation followed by chemical precipitation). However, D010 wastewaters and nonwastewaters were found to be mixed with other wastes. For these wastes, EPA has identified that additional treatment steps are required in order to meet all applicable treatment standards.

In the proposed rule, EPA proposed to grant all selenium nonwastewaters a national capacity variance because of a lack of vitrification treatment capacity. In the final rule, EPA has determined that selenium nonwastewaters may reach the treatment standards through stabilization. Because adequate stabilization capacity exists, EPA is not granting D010 and U204 nonwastewaters a national capacity variance. EPA's analysis of the data set has also revealed that adequate treatment capacity exists for D010 and U204 wastewaters (Tables 3-33 and 3-34). Therefore, EPA is not granting these selenium wastewaters a national capacity variance.

Data indicate that P103, P114, and U205 wastes are being generated but are not being land disposed. Therefore, EPA is not granting these selenium wastewaters and nonwastewaters a national capacity variance.

Table 3-33 Capacity Analysis for D010 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	--	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:			
Chemical Precipitation		297,476	93,560,960
Stabilization		1,728,461	935,812
Subtotals for BDAT:		2,025,937	94,496,772
Quantities Included in Mixtures and Assigned to Additional Technology:			
Chemical Oxidation Followed by Chemical Precipitation		0	400,000
Chromium Reduction and Chemical Precipitation		15,349	334,341
Combustion of Liquids		1,369	9,600
Combustion of Sludges		4,146	0
Combustion of Solids		1,952	0
Subtotals for non-BDAT:		22,816	743,941
Overall Total:		2,048,753	95,240,713

Table 3-34 Capacity Analysis for U204 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Stabilization	110	0
Overall Total:	110	0

3.2.8 Silver Wastes D011, P099, and P104

EPA has identified three hazardous wastes that potentially contain high levels of silver. These include D011 (EP Toxic for silver), P099 (potassium silver cyanide), and P104 (silver cyanide). Treatment standards for P099 and P104 nonwastewaters were promulgated in the Second Third final rule (54 FR 26614 (June 23, 1989)). Treatment standards for silver in P099 and P104 wastes were not promulgated due to the lack of treatment data. Today, EPA is promulgating treatment standards for silver in all D011, P099, and P104 wastes.

For P099 and P104 wastewaters, EPA is promulgating concentration standards based on chemical precipitation. For D011, EPA is promulgating concentration standards based on chemical precipitation for wastewaters, and recovery or stabilization for nonwastewaters.

As shown in Table 3-35, D011 wastes identified from the data set as requiring alternative treatment have been assigned to various treatment technologies. D011 wastes that were hazardous only due to the presence of silver were assigned to a BDAT treatment based on whether the waste was a wastewater or nonwastewater. For D011 contaminated with organics, incineration is required as a pretreatment step. Although D011 wastes must undergo the assigned BDAT method of treatment, EPA has identified that many D011 waste streams contain other types of wastes that will require additional treatment in order to meet all of the applicable treatment standards.

Analysis of the data set indicated that no deepwell-injected volumes or surface-disposed volumes of P099 and P104 wastes require alternative treatment capacity. Therefore, EPA is not granting a national capacity variance for these wastes.

Based on analysis of the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed and deepwell-injected D011 waste requiring alternative treatment. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-35 Capacity Analysis for D011 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Precipitation	802,043	235,760
Incineration of Liquids	4,489	8,540
Incineration of Sludges	21,845	0
Incineration of Solids	265	0
Stabilization	94,357	0
Stabilization of Incinerator Ash	2,207	0
Stabilization of Retort Slag	1,406	0
Stabilization of Scrubber Water Treatment Sludge	266	24
Stabilization of Wastewater Treatment Sludge	153,955	366
Subtotals for BDAT:	1,080,833	244,690
Quantities Included in Mixtures and Assigned to Additional Technology:		
Chemical Oxidation Followed by Chemical Precipitation	612	8
Chromium Reduction and Chemical Precipitation	121,414	28,860
Mercury Retorting	392	0
Vitrification	1,309,530	228
Subtotals for non-BDAT:	1,431,948	29,088
Overall Total:	2,512,781	273,778

3.2.9 Thallium Wastes P113, P114, P115, U214, U215, U216, and U217

RCRA hazardous wastes P113 (thallic oxide), P114 (thallium selenite), P115 (thallium sulfate), U214 (thallium (I) acetate), U215 (thallium (I) carbonate), U216 (thallium (I) chloride), and U217 (thallium (I) nitrate) are thallium wastes that are listed for toxicity or as being acutely toxic. P113, P114, U214, U215, U216, and U217 are Second Third wastes for which treatment standards were not set and therefore have been subject to the soft hammer requirements. EPA is promulgating wastewater and nonwastewater treatment standards for P113, P114, P115, U214, U215, U216, and U217 thallium wastes. Thallium wastes are produced by one manufacturer in small volumes. Most of the thallium compounds are used in research, in the electrical industry for the production of thallium-activated sodium iodide crystals, in the glass industry as low-melting alloys, and as catalysts in the organic chemical industry.

EPA has identified the BDAT for all thallium wastewaters to be numerical standards based on chemical precipitation. For P113, P115, U214, U215, U216, and U217 nonwastewaters, EPA is promulgating thermal recovery or stabilization as methods of treatment. For P114 nonwastewaters, EPA is promulgating concentration standards based on recovery, stabilization, and vitrification.

Based on analysis of the data set, EPA has identified that there is adequate alternative treatment capacity for surface-disposed P115, U214, and U217 thallium wastes. Therefore, EPA is not granting a national capacity variance for P115, U214, and U217 wastes (Tables 3-36, 3-37, and 3-38).

Analysis of the data set revealed no deepwell-injected or surface-disposed volumes of P113, P114, U215, and U216 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-36 Capacity Analysis for P115 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Oxidation Followed by Chemical Precipitation	4,800	0
Stabilization	48	0
Overall Total:	4,848	0

Table 3-37 Capacity Analysis for U214 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Stabilization	16	0
Overall Total:	16	0

Table 3-38 Capacity Analysis for U217 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery —	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Stabilization	240	0
Overall Total:	240	0

3.2.10 Vanadium Wastes P119 and P120

Vanadium compounds are used primarily as alloying materials in iron and steel production or as catalysts in several manufacturing processes such as adipic acid, sulfuric acid, synthetic rubber, and crude oil. Most of the vanadium produced in the United States is produced from mined ores or recovery processes. Vanadium is recovered from mining ores by calcining and leaching of the calcined material. Recovery processes usually recover the vanadium in its pentoxide state. Vanadium is recovered in uranium production via liquid/liquid extraction, and the product is usually in the form of ammonium metavanadate. Therefore, EPA believes that these wastes compromise one treatability group because they are produced from the same mined ores and are used as catalysts in similar industries. Vanadium wastes can be generated as a fly ash or slag from the iron and steel industries, or as a spent catalyst from the chemical manufacturing process. Based on information from the generators survey, these wastes could be classified as inorganic solids, organic liquids, or used bags or drums. For P119 and P120 nonwastewaters, EPA is promulgating stabilization as the method of treatment. For wastewaters, EPA is promulgating concentration standards based on chemical precipitation.

The P119 and P120 waste volumes requiring alternative treatment are shown in Tables 3-39 and 3-40, along with the associated treatment technology.

Based on analysis of the data set, EPA has identified that there is adequate treatment capacity for P119 and P120 surface-disposed nonwastewaters. No deepwell-injected volumes of these wastes were reported in the data set. Therefore, EPA is not granting a national capacity variance for P119 and P120 wastewaters and nonwastewaters.

Table 3-39 Capacity Analysis for P119 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Stabilization	106	0
Overall Total:	106	0

Table 3-40 Capacity Analysis for P120 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Stabilization	63,951	0
Overall Total:	63,951	0

3.3 Treatment Standards for Remaining F and K Wastes

3.3.1 Cyanide Wastes F002 and F005

RCRA hazardous wastes F002 (the following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane, ortho-dichlorobenzene, and trichlorofluoromethane; all spent solvent mixtures/blends containing, before use, a total of 10 percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F001, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures) and F005 (the following spent nonhalogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of 10 percent of more (by volume) of one or more of the above nonhalogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures) are hazardous spent solvents.

Treatment standards for F002 and F005 were promulgated in the Solvents and Dioxins rule. In February 1986, EPA amended the listing of F002 and F005 to include four new constituents: 1,1,2-trichloroethane, benzene, 2-ethoxyethanol, and 2-nitropropane (51 FR 6737). However, no treatment standards were promulgated for these new constituents since no analytical methods could satisfactorily analyze 2-ethoxyethanol and 2-nitropropane in complex waste matrices at that time.

Today, EPA is revising the treatment standards for F002 and F005 to account for these four newly listed F002 and F005 constituents. Wastewater concentration standards for F002 containing 1,1,2-Trichloroethane and F005 containing benzene are based on: biological treatment, or steam stripping, or carbon adsorption, or liquid extraction. For nonwastewaters containing either of the two constituents, concentration standards are based on incineration. for F005 containing 2-Ethoxyethanol, EPA is promulgating incineration as the method of treatment for nonwastewaters, and incineration or biodegradation as methods of treatment for wastewaters. For F005 wastewaters containing 2-

nitropropane, EPA is promulgating incineration, or wet-air oxidation followed by carbon adsorption, or chemical oxidation followed by carbon adsorption as methods of treatment. For F005 nonwastewaters containing 2-nitropropane, EPA is requiring incineration as the method of treatment.

For the Solvent and Dioxins final rule, EPA analyzed all F002 and F005 wastes requiring alternative treatment capacity. Because the technologies are the same as those required for the Solvent and Dioxins, EPA is not including required capacity volumes in the capacity analysis for this proposed rule. Because EPA has identified that sufficient capacity exists to treat these wastes, EPA is not granting F002 and F005 wastewaters and nonwastewaters a national capacity variance.

3.3.2 F006 and F019

RCRA hazardous waste F006 is wastewater treatment sludges from certain electroplating operations. F006 is listed as hazardous because of the presence of cadmium, hexavalent chromium, nickel, and cyanides (complexed). In the land disposal restrictions for the First Third rule (53 FR 31138), EPA set treatment standards for the metals in F006 nonwastewaters based on stabilization; in the Second Third rule (54 FR 26609), EPA set treatment standards for amenable and total cyanides in F006 nonwastewaters based on alkaline chlorination followed by chemical precipitation, settling and filtration.

For the Third Third final rule, EPA is promulgating metals and cyanide treatment standards for F006 wastewaters. EPA is promulgating concentration standards based on alkaline chlorination for the amenable and total cyanides, and chemical reduction followed by chemical precipitation for the four metal standards. Because F006 is a broadly defined waste code, further distinction was used to assign F006 wastewaters to alternative treatment capacity. F006 wastewaters that contain chromium and not cyanides were assigned to chromium reduction followed by chemical precipitation. Wastewaters resulting from plating operations other than chromium plating were assigned in one of two ways, depending on the original wastewater treatment process that produced the F006 residual wastewater. Those F006 wastewaters produced from processes that included cyanide treatment were assigned to chemical precipitation alone, and F006 wastewaters that were not previously treated for cyanides were assigned to alkaline chlorination followed by chemical precipitation. Residuals from the BDAT treatment of F006 wastewaters will require additional treatment in order to meet the F006 nonwastewater standards previously promulgated.

As shown in Tables 3-41 through 3-43, both surface-disposed and deepwell-injected F006 wastewaters were identified from the data set as requiring alternative treatment. For F006 wastewaters for which it could not be determined whether the waste contained cyanides, as a worst case scenario, EPA assumed that these waste streams would require cyanide treatment. The non-cyanide F006 wastewaters requiring alternative treatment were also distinguished between those containing chromium and those not containing chromium. Several waste streams will require chromium reduction in addition to chemical precipitation. All of the F006 wastewaters were assigned to the appropriate BDAT based on whether cyanide or chromium were part of the waste composition.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed and deepwell-injected F006 wastewaters requiring alternative treatment. Therefore, EPA is not granting a national capacity variance for these wastes.

RCRA hazardous wastes classified as F019 consist of wastes generated from the chemical conversion coating of aluminum. F019 wastes are listed as hazardous because of the presence of hexavalent chromium and cyanides (complexed). Treatment standards for F019 were originally scheduled to be promulgated in the First Third rule; because EPA did not set standards by the statutory deadline, these wastes have been subject to the "soft hammer" provisions. Today EPA is promulgating concentration-based treatment standards for F019 wastes. EPA has identified the BDAT technologies for F019 wastewaters to be based on alkaline chlorination for cyanides; chromium reduction followed by chemical precipitation for metals; and, for nonwastewaters, alkaline chlorination for cyanides and stabilization for the metals. Some F019 waste streams have been identified which also contain organic wastes. For these wastes, EPA has identified that incineration followed by chromium reduction of the scrubber water and stabilization of the ash and scrubber water treatment residues will meet the BDAT treatment standards established for F019.

As shown in Table 3-44, F019 wastewaters and nonwastewaters requiring alternative treatment include both deepwell-injected and surface-disposed wastes. They have been assigned to one of the BDAT technologies as described above.

Based on the data set, EPA has determined that adequate alternative treatment capacity exists for the surface-disposed and deepwell-injected volumes of F019 wastewaters and nonwastewaters requiring alternative treatment capacity. Therefore, EPA is not granting a national capacity variance for these surface-disposed and deepwell-injected F019 wastes.

Table 3-41 Capacity Analysis for F006a (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Alkaline Chlorination followed by Chemical Precipitation	1,548,179	500,288
Subtotals for BDAT:	1,548,179	500,288
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Wastewater Treatment Sludge	10,063	0
Subtotals for non-BDAT:	10,063	0
Overall Total:	1,558,242	500,288

F006a is F006 cyanides

Table 3-42 Capacity Analysis for F006b (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Precipitation	0	3,001,731
Overall Total:	0	3,001,731

F006b is F006 treated cyanides

Table 3-43 Capacity Analysis for F006c (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chromium Reduction and Chemical Precipitation	18,750,000	1,500,865
Overall Total:	18,750,000	1,500,865

F006c is F006 cyanide with chrome

Table 3-44 Capacity Analysis for F019 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Alkaline Chlorination	6,330,375	0
Alkaline Chlorination followed by Chemical Precipitation	1,812	1,440
Stabilization of Wastewater Treatment Sludge	6,267,089	14
Subtotals for BDAT:	12,599,276	1,454
Quantities Included in Mixtures and Assigned to Additional Technology:		
Combustion of Sludges	1,680	0
Stabilization of Incinerator Ash	168	0
Stabilization of Scrubber Water Treatment Sludge	17	0
Subtotals for non-BDAT:	1,865	0
Overall Total:	12,601,141	1,454

3.3.3 F024

Concentration-based treatment standards for organics in F024 (Chlorinated aliphatic hydrocarbon production wastes) wastewaters and nonwastewaters were promulgated in the Second Third rule. The treatment standards were based on the performance of rotary kiln incineration for organic constituents, and chemical precipitation for metal constituents in wastewaters. Today, EPA is revising certain of these standards and is promulgating concentration standards based on stabilization for metal constituents in F024 nonwastewaters. EPA is providing the option of incineration as a treatmnt method for this waste in order to remove obstacles to acceptance, previously created by the explicit standard for dioxins and furans.

As shown in Table 3-45, all of the surface-disposed F024 nonwastewaters identified from the data set as requiring alternative treatment for this rulemaking have been assigned to stabilization. This volume is based on the volume identified requiring incineration for the Second Third final rule capacity analysis. The volumes of F024 requiring incineration were accounted for in the capacity analysis for the Second Third rule. For the capacity analysis for the Third Third rule, F024 residual volumes were assigned to stabilization.

EPA has identified that adequate treatment capacity exists for the surface-disposed F024 nonwastewaters requiring alternative treatment. Therefore, EPA is not granting a national capacity variance for these wastes.

Further analysis of the data set revealed no deepwell-injected volumes of F024 nonwastewaters requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these deepwell-injected wastes.

Table 3-45 Capacity Analysis for F024 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Stabilization	16,945	0
Overall Total:	16,945	0

3.3.4 F025

F025 (condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatics) is a newly listed RCRA waste. Most generators already treat F025 as if it were hazardous, and some facilities commingle F024 and F025. Today, EPA is promulgating concentration-based treatment standards for all categories of F025 wastewaters and nonwastewaters based on incineration.

Analysis of the data set revealed no deepwell-injected or surface-disposed volumes of F025 requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes, and is restricting land disposal on June 11, 1990.

3.3.5 K001 and U051

RCRA hazardous waste U051 (cresote) is a polynuclear aromatic hydrocarbon listed as hazardous for toxicity. K001 is bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol. EPA is promulgating revisions to the concentration-based treatment standards for K001 organics due to a mathematical error that was made in the calculation of the original standards in the First Third rule. Since the treatment standards for U051 wastewaters and nonwastewaters are based on a transfer of the performance of K001, the concentration-based standards for U051 also reflect this change. For the organics in K001 and U051 wastewaters and nonwastewaters, EPA is promulgating concentration standards based on incineration. EPA is also finalizing concentration standards for lead in K001 and U051 based on stabilization for nonwastewaters and chemical precipitation for wastewaters.

As shown in Table 3-46, the U051 wastes requiring alternative treatment are surface-disposed nonwastewaters. Most of these wastes have been assigned to the appropriate technology for nonwastewaters based on the physical form of the waste.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed U051 wastes requiring alternative treatment. Therefore, EPA is not granting a national capacity variance for this waste. In addition, since no deepwell-injected U051 waste volumes have been reported, EPA is not granting a national capacity variance for these wastes.

A small amount of U051 nonwastewaters was assigned to vitrification as it was part of a mixture. Although, EPA believes that no capacity is available for vitrification, EPA is not granting a variance for U051 nonwastewaters because this treatment is not necessary to meet the concentration-based standards.

Table 3-46 Capacity Analysis for U051 (Excluding Soil and Debris)

Type of Alternative – Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Biological Treatment	24,417	0
Combustion of Liquids	24,417	0
Combustion of Sludges	13,604	0
Combustion of Solids	74,547	0
Subtotals for BDAT:	136,985	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	16,513	0
Stabilization of Scrubber Water Treatment Sludge	1,125	0
Vitrification	73	0
Subtotals for non-BDAT:	17,711	0
Overall Total:	154,696	0

3.3.6 Waste from Pigment Production K002, K003, K004, K005, K006, K007, and K008

RCRA wastes K002, K003, K004, K005, K006, K007, and K008 are wastes generated during the production of inorganic pigments. These wastes are listed as hazardous because of the presence of hexavalent chromium and lead. EPA promulgated treatment standards of "no land disposal based on no generation" for K004 and K008 nonwastewaters during the First Third final rule. EPA promulgated treatment standards of "no land disposal based on no generation" for K005 and K007 nonwastewaters during the Second Third final rule. In addition, for the Second Third final rule, EPA promulgated treatment standards of "no land disposal based on total reuse/recycle" for K002, K003, and K006. For the Third Third rule, however, EPA is promulgating revisions for these treatment standards.

EPA is revoking the "no land disposal based on no generation" for K005 and K007 nonwastewaters, because a source wishing to manufacture these pigments in the future would be forced to apply for a variance from the treatment standard. EPA is also revoking the "no land disposal based on no generation" for K004 and K008 nonwastewaters. The treatment standards for K002, K003, and K006 based on total recycling using secondary lead smelting have been revised because hazardous residuals that require further treatment may be produced.

EPA is promulgating concentration standards based on chromium reduction followed by chemical precipitation for K002, K003, K004, K006, and K008 wastewaters, and alkaline chlorination followed by chromium reduction followed by chemical precipitation for K005 and K007 wastewaters. For nonwastewater forms of these wastes, EPA is promulgating concentration standards based on stabilization.

As shown in Tables 3-47 through 3-51, K002, K003, K004, K005, and K006 wastes were identified from the data set as requiring alternative treatment. However, only K002 wastes were disposed of by deepwell-injection; the other wastes are not currently deepwell-injected. All of these wastes were assigned to one of the BDAT technologies as described above.

Based on the data set, EPA has identified that adequate treatment capacity exists for the deepwell-injected and surface-disposed K002, K003, K004, K005, and K006 wastes requiring alternative treatment. Therefore, EPA is not granting a national capacity variance for these wastes.

Analysis of the data set revealed no deepwell-injected or surface-disposed volumes of K007 and K008 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-47 Capacity Analysis for K002 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chromium Reduction and Chemical Precipitation	130,320	130,680
Stabilization	82,320	0
Stabilization of Wastewater Treatment Sludge	23,605	2,614
Overall Total:	236,245	133,294

Table 3-48 Capacity Analysis for K003 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chromium Reduction and Chemical Precipitation	130,320	0
Stabilization	82,320	0
Stabilization of Wastewater Treatment Sludge	23,605	0
Overall Total:	236,245	0

Table 3-49 Capacity Analysis for K004 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chromium Reduction and Chemical Precipitation	115,200	0
Stabilization of Wastewater Treatment Sludge	1,152	0
Overall Total:	116,352	0

Table 3-50 Capacity Analysis for K005 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chromium Reduction and Chemical Precipitation	115,200	0
Stabilization of Wastewater Treatment Sludge	1,152	0
Overall Total:	116,352	0

Table 3-51 Capacity Analysis for K006 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chromium Reduction and Chemical Precipitation	115,200	0
Stabilization	91,920	0
Stabilization of Wastewater Treatment Sludge	1,152	0
Overall Total:	208,272	0

3.3.7 Acrylonitrile Production Wastes K011, K013, and K014

RCRA hazardous wastes K011, K013, and K014 are waste streams generated during the production of acrylonitrile. EPA promulgated treatment standards based on incineration for K011, K013, and K014 nonwastewaters during the Second Third final rule. Treatment standards for wastewaters were proposed during the Second Third rule, but were not promulgated because the K011, K013, and K014 wastewaters that were being disposed by deepwell-injection would not meet the definition of wastewaters (these wastewaters have greater than 1 percent total organic carbon). EPA is now promulgating a new definition for K011, K013, and K014 wastewaters (a total dissolved solid concentration of less than 1 percent and a total organic concentration of greater than 5 percent) and has identified concentration standards for these wastewaters based on wet-air oxidation.

The K011, K013, and K014 wastes that require alternative treatment are shown in Tables 3-52 through 3-54, along with the BDAT identified for each. As these tables show, all the K011, K013, and K014 wastewaters that require alternative treatment are disposed of by deepwell-injection.

K011, K013, and K014 represent all of the underground injected hazardous wastes addressed in today's rule that are best treated by wet-air oxidation. As shown in Table III.B.2.(c), the less than 1 million gallons of available capacity are inadequate to treat the quantity of K011, K013, and K014 wastewaters annually deepwell-injected requiring this type of treatment. Therefore, EPA is granting a two- year national capacity variance to the wastewater forms of K011, K013, and K014, prohibiting these wastes from underground injection on May 8, 1992. Analysis of the data set revealed no surface-disposed volumes of K011, K013, and K014 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these surface-disposed wastes. In the proposed Third Third rule, EPA solicited comment concerning the deepwell-injection of K014 nonwastewaters. Several commenters responded stating that under the wastewater/nonwastewater definition, K014 nonwastewaters are injected. EPA has reviewed these comments and agrees, and is extending the capacity variance for K014 wastes to include both wastewaters and nonwastewaters.

Table 3-52 Capacity Analysis for K011 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Wet Air Oxidation (only)	0	433,204,160
Overall Total:	0	433,204,160

Table 3-53 Capacity Analysis for K013 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery —	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Wet Air Oxidation (only)	0	407,166,320
Overall Total:	0	407,166,320

Table 3-54 Capacity Analysis for K014 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Wet Air Oxidation (only)	0	130,950,320
Overall Total:	0	130,950,320

3.3.8 Benzyl Chloride Distillation Waste K015

In the First Third final rule, EPA promulgated a treatment standard of "No Land Disposal Based on No Ash" for K015 (benzyl chloride distillation waste) nonwastewaters. Concentration-based standards for K015 wastewaters were also promulgated at that time. After promulgation, a facility generating K015 nonwastewaters submitted information indicating that their K015 waste generated an ash residue upon combustion. Therefore, EPA is revoking the "No Land Disposal Based on No Ash" standard for the nonwastewater form of K015 and is proposing numerical treatment standards for K015 nonwastewaters.

EPA is promulgating treatment standards for five organic and two metal constituents for the K015 nonwastewaters based on incineration followed by stabilization.

Analysis of the data set revealed no deepwell-injected and surface-disposed volumes of K015 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

3.3.9 K017 and K073

K017 is defined as the heavy ends (still bottoms) from the purification column in the production of epichlorohydrin; K073 is chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production. K017 and K073 were originally scheduled to be promulgated as part of the First Third rulemaking, but EPA did not promulgate standards at that time; therefore, land disposal of these wastes have been subject to the "soft hammer" provisions. Concentration-based treatment standards are being promulgated today for all wastewater and nonwastewater forms of K017 and K073 based on incineration.

As shown in Tables 3-55 through 3-56, all of the surface-disposed K017 and K073 wastes identified from the data set as requiring alternative treatment have been assigned to the BDAT based on the physical form of the waste. The BDAT treatment of these wastes does not normally require stabilization of treatment residuals. However, a volume of K017 nonwastewaters mixed with other RCRA codes was reported in the TSDR Survey. For these wastes, EPA believes that stabilization of incinerator ash and scrubber water treatment sludge may be required after incineration in order to meet all of the applicable treatment standards.

Analysis of the data set revealed no deepwell-injected volumes of K017 or K073 requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for deepwell-injected K017 and K073 wastes.

Based on further analysis of the data set, EPA has identified that adequate alternative treatment capacity exists for surface-disposed volumes of K017 and K073 requiring alternative treatment capacity. Therefore, EPA is not granting a national capacity variance for these surface-disposed wastes.

Table 3-55 Capacity Analysis for K017 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	68,400	0
Subtotals for BDAT:	68,400	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	12,528	0
Stabilization of Scrubber Water Treatment Sludge	626	0
Subtotals for non-BDAT:	13,154	0
Overall Total:	81,554	0

Table 3-56 Capacity Analysis for K073 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Sludges	1,723	0
Overall Total:	1,723	0

3.3.10 K021 Wastes

K021 is aqueous spent antimony catalyst from fluoromethanes production. Treatment standards for K021 wastes were originally scheduled to be promulgated as part of the First Third rulemaking. A treatment standard of "No Land Disposal Based on No Generation" for K021 nonwastewaters was promulgated in the First Third rule on August 8, 1988. EPA did not promulgate standards for the wastewater forms of K021 in the First Third rule, and therefore land disposal of these wastes have been subject to the "soft hammer" provisions. EPA has decided to establish concentration-based standards for all forms of K021, and thus has revoked the "No Land Disposal Based on No Generation" for K021 nonwastewaters, because the data set reports quantities of this waste being land disposed.

Concentration-based treatment standards for organics in wastewater and nonwastewater forms of K021 are being promulgated today based on incineration. For the metal constituent, specifically antimony, concentration-based treatment standards are being promulgated for K021 nonwastewaters based on stabilization of incinerator ash, and for K021 wastewaters based on chemical precipitation.

As shown in Table 3-57, all of the surface-disposed K021 wastes identified from the data set as requiring alternative treatment have been assigned to the BDAT based on the physical form of the waste and whether the waste was a wastewater or nonwastewater.

Analysis of the data set revealed no deepwell-injected volumes of K021 requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for deepwell-injected K021 wastes.

Based on an analysis of the data set, EPA has identified that adequate alternative treatment capacity exists for surface-disposed volumes of K021 requiring alternative treatment capacity. Therefore, EPA is not granting a national capacity variance for these surface-disposed wastes.

Table 3-57 Capacity Analysis for K021 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BOATS or Equivalents:		
Combustion of Solids	16,951	0
Stabilization of Incinerator Ash	3,390	0
Stabilization of Scrubber Water Treatment Sludge	170	0
Overall Total:	20,511	0

3.3.11 K022, K025, K026, K035, and K083

RCRA hazardous wastes K022 (Phenol/acetone production wastes), K025 (Nitrobenzene production wastes), K026 (Methyl ethyl pyridines production wastes), K035 (Creosote production wastes), and K083 (Aniline production wastes) contain similar treatable concentrations of aromatic organics and hydrocarbons. Treatment standards for K022, K025, and K083 nonwastewaters were promulgated in the First Third rule. EPA promulgated standards of "no land disposal based on no ash" for K083 nonwastewaters with undetectable ash and standards based on incineration followed by stabilization of ash for K022 nonwastewaters. K025 treatment standard of "no land disposal based on no generation" for nonwastewaters were promulgated in the Second Third final rule. (EPA did not set standards for the wastewater forms of K022 and K083 wastes by their statutory deadlines and, therefore, these wastewaters have been subject to the "soft hammer" provisions. K083 nonwastewaters with detectable ash also have been subject to the "soft hammer" provisions.)

For K022, K035, and K083 wastewaters, EPA is promulgating concentration standards based on: biological treatment, or steam stripping, or carbon adsorption, or liquid extraction. Concentration standards promulgated for metals in K022 and K083 wastewaters are based on chemical precipitation. For organics in K035 and K083 nonwastewaters, EPA is promulgating concentration standards based on incineration. For metals in K083 nonwastewaters, EPA is promulgating concentration standards based on stabilization of incineration ashes.

For K025 nonwastewaters, EPA is promulgating incineration as the method of treatment for wastewaters and nonwastewaters. In addition, EPA is also promulgating liquid-liquid extraction followed by steam stripping followed by carbon adsorption as an alternative method of treatment for K025 wastewaters.

As shown in Tables 3-58 and 3-59, K035 and K083 wastes were identified from the data set as requiring alternative treatment. These wastes were assigned to one of the BDAT technologies as described above. K083 nonwastewater volumes requiring stabilization were derived based on the volumes requiring incineration estimated for the capacity analysis for the First Third final rule.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed K035 wastes and surface-disposed and deepwell-injected K083 wastes requiring alternative treatment. No deepwell-injected K035 waste were identified as requiring alternative treatment. Therefore, EPA is not granting a national capacity variance for K035 or K083 wastes.

Analysis of the data set revealed no deepwell-injected or surface-disposed volumes of K022, K025, or K026 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-58 Capacity Analysis for K035 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Sludges	1,920	0
Overall Total:	1,920	0

Table 3-59 Capacity Analysis for K083 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	5,000,000
Stabilization	15,146	631
Subtotals for BDAT:	15,146	5,000,631
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	0	50,000
Stabilization of Scrubber Water Treatment Sludge	0	50,000
Subtotals for non-BDAT:	0	100,000
Overall Total:	15,146	5,100,631

3.3.12 K028, K029, K095, and K096 Wastes

RCRA hazardous wastes K028, K029, K095, and K096 are generated from trichloroethane production. Treatment standards for these wastes were originally scheduled to be promulgated as part of the Second Third rule. Treatment standards based on incineration were only promulgated for K028 wastewaters and nonwastewaters, and K029, K095, and K096 nonwastewaters. Since EPA did not promulgate standards for the wastewater forms of K029, K095, and K096 by their statutory deadline, land disposal of these wastewaters has been subject to the "soft hammer" provisions.

EPA stated that it intended to develop standards for metals in nonwastewater forms of K028 and promulgate them with the Third Third wastes. Concentration standards for metal constituents in K028 nonwastewaters are promulgated today based on stabilization. For K029, K095, and K096 organic wastewaters, concentration standards are based on incineration.

Based on an analysis of the data set, alternative treatment capacity is not needed for deepwell-injected or surface-disposed K028, K029, K095, and K096 wastes for this rulemaking. Therefore, EPA is not granting a national capacity variance for deepwell-injected or surface-disposed K028, K029, K095, or K096 wastes.

3.3.13 K032, K033, K034, K041, K097, K098

Today EPA is promulgating concentration-based treatment standards for the following wastes: K032 (wastewater treatment sludge from the production of Chlordane), K033 (wastewater treatment scrubber water from the chlorination of cyclopentadiene in the production of Chlordane), K034 (filter solids from filtration of hexachloro-cyclopentadiene in the production of Chlordane), K041 (wastewater treatment sludge from the production of Toxaphene), K097 (vacuum stripper discharge from the Chlordane chlorinator in the production of Chlordane), and K098 (untreated process wastewater from the production of Toxaphene). EPA is promulgating concentration standards based on incineration for both wastewaters and nonwastewaters.

As shown in Tables 3-60 through 3-61, all of the surface-disposed and deepwell-injected K032 and K097 wastes identified from the data set as requiring alternative treatment have been assigned to their BDAT technologies based on the physical form of the waste and whether they were wastewaters or nonwastewaters.

Analysis of the data set revealed no deepwell-injected volumes of K033, K034, K041, and K098, or surface-disposed volumes of K032, K033, K034, K041, K097, and K098 requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these deepwell-injected and surface-disposed wastes.

Based on further analysis of the data set, EPA has identified that adequate alternative treatment capacity exists for deepwell-injected volumes of K032 and K097. Therefore, EPA is not granting a national capacity variance for these deepwell-injected wastes.

Table 3-60 Capacity Analysis for K032 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	5,360
Overall Total:	0	5,360

Table 3-61 Capacity Analysis for K097 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	26,480
Overall Total:	0	26,480

3.3.14 Disulfoton Production Wastes K036 and K037

RCRA hazardous wastes K036 (still bottoms from toluene reclamation distillation in the production of disulfoton) and K037 (wastewater treatment sludges from the production of disulfoton) are hazardous wastes from the production of disulfoton. EPA is revising treatment standards for the wastewater forms of K037 and the nonwastewater forms of K036. EPA promulgated a treatment standard of "No Land Disposal Based on No Generation" for K036 nonwastewaters in the First Third final rule on August 8, 1988. EPA amended this standard on May 2, 1989, to apply to wastes generated from the process described in the listing description and disposed after August 17, 1988. EPA also promulgated treatment standards based on incineration for K037 wastewaters and nonwastewaters in First Third Rule. Today, EPA is promulgating revised treatment standards for K036 nonwastewaters and K037 wastewaters. EPA is promulgating a concentration-based standard for K036 nonwastewaters based on incineration. For K037 wastewaters, EPA is promulgating to revise the BDAT treatment standard based on incineration promulgated in the First Third final rule, to one based on biological treatment.

Analysis of the data set revealed no deepwell-injected or surface-disposed volumes of K036 and K037 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

3.3.15 K042, K085, and K105

EPA has grouped these three K wastes together because they all contain or are represented by HOCs that have the structural classification known as chlorobenzenes. These chemicals consist of one benzene ring with increasing chlorine substitution and their associated isomers.

K042 and K105

RCRA hazardous wastes K042 (heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T), and K105 (separated aqueous stream from the reactor product washing step in the production of chlorobenzenes) are halogenated organic wastes listed for toxicity. Treatment standards for K042 and K105 were originally scheduled to be promulgated in the Second Third rule. Because EPA did not promulgate standards by the statutory deadline for these wastes, their land disposal has been subject to the "soft hammer" provisions. Today EPA is promulgating concentration-based standards for K042 and K105 based on incineration for the nonwastewater and wastewater forms.

As shown in Tables 3-63, the surface-disposed and deepwell-injected K105 wastes requiring alternative treatment have been assigned to the BDAT based on the physical form of the wastes and whether they were wastewaters or nonwastewaters.

Analysis of the data set revealed no deepwell-injected volumes of K042 and K105, or surface-disposed volumes of K042 requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these deepwell-injected and surface-disposed wastes.

Based on further analysis of the data set, EPA has identified that adequate alternative treatment capacity exists for surface-disposed volumes of K105. Therefore, EPA is not granting a national capacity variance for these surface-disposed wastes.

K085

Treatment standards for K085 wastes (distillation of fractionation column bottoms from the production of chlorobenzenes) were originally scheduled to be promulgated in the First Third rule. Because EPA did not promulgate standards by the statutory deadline for these wastes, land disposal of those wastes has been subject to the "soft hammer" provisions. EPA determined that the untreated K085 wastes often contained various concentrations of PCBs. Therefore, today EPA has decided to promulgate concentration-based treatment standards for PCBs for both wastewater and nonwastewater forms of K085. If K085 wastes exceed 50 ppm PCBs, they must be incinerated in a TSCA permitted facility. (Several of the commercial facilities that are permitted for RCRA wastes are also permitted for PCB-contaminated wastes under TSCA.) The BDAT for K085 wastewaters and nonwastewaters are concentration standards based on incineration.

As shown in Table 3-62, all of the surface-disposed K085 wastes identified from the data set as requiring alternative treatment have been assigned to the BDAT technology based on the physical form of the waste and whether it was a wastewater or nonwastewater.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed K085 wastes requiring alternative treatment. No deepwell-injected volume of K085 requiring alternative treatment was identified. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-62 Capacity Analysis for K085 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery --	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	99,600	0
Overall Total:	99,600	0

Table 3-63 Capacity Analysis for K105 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	4,560	0
Overall Total:	4,560	0

3.3.16 K044, K045, K046, and K047 Wastes

(1) K046 Waste from Lead-Based Initiating Compounds

RCRA hazardous waste K046 (wastewater treatment sludges from the manufacturing and processing of explosives) are wastes from lead-based initiating compounds. In the First Third final rule, EPA promulgated treatment standards based on stabilization for K046 nonreactive nonwastewaters. Today, EPA is promulgating concentration based standards for K046 reactive nonwastewaters based on deactivation followed by stabilization. For K046 reactive wastewaters, EPA is promulgating concentration standards based on deactivation and chemical precipitation. For K046 non-reactive wastewaters, EPA is promulgating concentration standards based on deactivation followed by chemical precipitation. Deactivation includes chemical reduction or detonation.

Analysis of the data set revealed no deep-well-injected or surface-disposed volumes of K046 wastewaters or reactive nonwastewaters requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

(2) K044, K045, K047 Reactive Wastes

RCRA hazardous wastes K044 (wastewater treatment sludges from the manufacturing and processing of explosives), K045 (spent carbon from the treatment of wastewater containing explosives) and K047 (pink/red water from TNT operations) are listed as hazardous wastes because they are reactive. In the First Third rule, EPA promulgated the standard of "no land disposal based on reactivity" for K044, K045, and K047 wastewaters and nonwastewaters. Today, EPA is revoking this standard and promulgating deactivation as the method of treatment for wastewaters and nonwastewaters.

Analysis of the data set revealed no deepwell-injected or surface-disposed volumes of K044, K045, and K047 wastewaters or nonwastewaters requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

3.3.17 Petroleum Refining Wastes K048, K049, K051, and K052

EPA is promulgating treatment standards for K048-K052 based on data from incineration, solvent extraction, and treatment of the metals in wastewater and nonwastewater residuals. EPA is promulgating concentration standards for cyanide in K048-K052 wastewaters based on incineration. EPA is also promulgating concentration standards based on solvent extraction or incineration for organic constituents in K048-K052 nonwastewaters. EPA is neither revising the promulgated BDAT treatment standards for organic or metal constituents in K048-K052 wastewaters, nor for cyanide in nonwastewaters. In addition, today's rule deletes the treatment standards proposed for arsenic and selenium in nonwastewater forms of K048-K052 based on stabilization. Today's rule also promulgates revised treatment standards for nickel and total chromium in nonwastewater forms of K048-K052 based on stabilization or recovery.

The TSDR Survey indicates that 153.9 million gallons of K048-K052 will require treatment capacity (i.e., will be displaced from land disposal and will require treatment). This volume is supplemented by the volume of residuals (i.e., incinerator ash or solvent extraction residues, and scrubber water treatment sludge) requiring additional treatment. Tables 3-64 through 3-68 indicate the volume of surface disposed nonwastewaters requiring alternative treatment. EPA recognizes, however, that this information is dated, and to this end undertook to obtain as current an assessment of demand for treatment capacity as possible.

Based on informal contact with the petroleum industry trade association, it appears that the industry may be able to manage approximately three quarters of these wastes on-site after August 1990 (refer to "Collection of Miscellaneous Materials for K048-K052 Capacity" in the docket), in ways not involving land disposal (primarily in-house incineration, use as fuel, or use in coking). (This figure is based on an informal survey of 93 API member companies and assumes that none of the pending no migration petitions for land treatment units will be granted. However, this estimate does not account for the uncertainty and timing of constructing and obtaining permits for on-site disposal/treatment facilities. Therefore, assuming best case (i.e., on-site capacity is available), this results in approximately 38.6 million gallons per year of wastes that will require alternative treatment capacity.

EPA estimates that there presently exists approximately 21.9 million gallons of capacity for treatment of K048-K052 wastes in the form of solids incineration capacity and fuel substitution capacity (these wastes are suitable for use as alternative fuels in industrial furnaces provided that they are dewatered first). There is very little commercial solvent extraction capacity presently on-line. (EPA knows of some small volume mobile solvent extraction units being utilized in California, but these units provides limited volumetric treatment capacity.) Thus, based on these data, there would be a capacity shortfall of approximately 14.4 million gallons as of May 8.[2]

EPA is aware of one large commercial incinerator which could come on line after May 8 that could provide substantial volumes of capacity (14.4 million gallons of new annual capacity which is in addition to the 24 million gallons of existing capacity) for K048-K052 wastes. This facility is presently seeking a no-migration petition from EPA regarding disposal of scrubber water into a deep injection well. If the petition is granted, this facility would provide sufficient capacity to accommodate treatment demand posed by petroleum wastes. A final decision on the no-migration petition is expected within the next six weeks. (There could still be short-term logistic difficulties associated with getting wastes to the facility and the facility coming on-line that could prevent immediate utilization of this capacity, however.)

EPA also recently became aware (within the last two weeks) of additional solids incineration capacity which is presently available that would provide significant additional treatment capacity for petroleum wastes. This technology, however, requires that wastes undergo a specialized dewatering pretreatment step. The treatment company presently has two mobile dewatering pretreatment units and (according to its estimates) can add two additional dewatering units every three months. This limited amount of pretreatment equipment (there are approximately 190 petroleum facilities to be serviced) could create a temporary treatment bottleneck in the utilization of this incineration capacity. (This information appears to have been presented to the petroleum industry by the treatment company late in 1989, so that EPA does not see notice and comment problems vis-a-vis the petroleum industry in relying on the information in this rulemaking.)

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[2] It was on the basis of this analysis that EPA senior management tentatively concluded that a one-year national capacity extension might be warranted, which draft determination was communicated to all interested parties by letter late in April, a copy of which is available in the docket. This was not a final EPA decision, however, and EPA continued to monitor the situation. The determination in the final rule reflects more information than available at the time of the tentative determination.

Based on this information, EPA has decided to grant a six-month national capacity variance for these wastes, lasting through November 7, 1990. (This effectively extends the industry's prohibition compliance data three months from the date established in the First Third rulemaking). EPA believes that by this date, there will be adequate pretreatment capacity as well as incineration and fuel substitution capacity to satisfy demand. There also may be solvent extraction capacity available by that date, although there are sharply conflicting estimates in the record of how quickly solvent extraction capacity can be brought on-line. EPA would be unjustified, however, in extending the national capacity variance until solvent extraction capacity is available. See S. Rep. No. 284, 98th Cong. 1st Sess. 19 ("It is not intended that a generating industry . . . could be allowed to continue to have its wastes disposed of in an otherwise prohibited manner solely by binding itself to using a facility which has not been constructed. Thus, when an 'alternate technology' facility is operating at less than maximum capacity, the Administrator should determine that alternative capacity is available . . . ."). Thus, EPA's decision today is based on its best estimates of when treatment capacity of any type will be available to accommodate these wastes.

EPA recognizes that these data are not the most precise, in some cases. In addition, EPA is concerned with using data that it obtains at the very end of the rulemaking in making such decisions. Therefore, EPA will make this additional information available. Based on further information, EPA may amend the capacity extension in today's rule (through use of appropriate rulemaking procedures).

Table 3-64 Capacity Analysis for K048 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	33,407,730	0
Subtotals for BDAT:	33,407,730	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	3,340,773	0
Stabilization of Scrubber Water Treatment Sludge	334,077	0
Subtotals for non-BDAT:	3,674,850	0
Overall Total:	37,082,580	0

Table 3-65 Capacity Analysis for K049 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	28,455,250	0
Subtotals for BDAT:	28,455,250	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	2,983,115	0
Stabilization of Scrubber Water Treatment Sludge	284,553	0
Subtotals for non-BDAT:	3,267,668	0
Overall Total:	31,722,918	0

Table 3-66 Capacity Analysis for K050 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	10,611,680	0
Subtotals for BDAT:	10,611,680	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	1,086,370	0
Stabilization of Scrubber Water Treatment Sludge	106,117	0
Subtotals for non-BDAT:	1,192,487	0
Overall Total:	11,804,167	0

Table 3-67 Capacity Analysis for K051 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	70,279,848	0
Subtotals for BDAT:	70,279,848	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	7,163,678	0
Stabilization of Scrubber Water Treatment Sludge	702,798	0
Subtotals for non-BDAT:	7,866,476	0
Overall Total:	78,146,324	0

Table 3-68 Capacity Analysis for K052 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	11,207,805	0
Subtotals for BDAT:	11,207,805	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	1,139,558	0
Stabilization of Scrubber Water Treatment Sludge	112,078	0
Subtotals for non-BDAT:	1,251,636	0
Overall Total:	12,459,441	0

3.3.18 Coking Operations Wastes K060

RCRA hazardous waste K060 (ammonia still lime sludge from coking operations) is hazardous waste from coking operations. In the First Third final rule, EPA proposed a standard of "No Land Disposal Based on No Generation" for K060 nonwastewaters. Today, EPA is revoking this standard since a facility might legitimately use ammonia as a reagent in the coking process and therefore may generate this waste. Today, for K060 nonwastewaters, EPA is promulgating treatment standards based on incineration as the BDAT. EPA is also promulgating concentration standards for K060 wastewaters based on biological treatment. For K060 arsenic nonwastewaters, EPA is promulgating BDAT standards based on vitrification.

Analysis of the data set revealed no deepwell-injected or surface-disposed volumes of K060 requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

3.3.19 Electric Furnace Steel Production Wastes K061

RCRA hazardous waste K061 (emission control dust/sludge from the primary production of steel in electric furnaces) is hazardous waste from electric furnace steel production. In the First Third rule, two categories of K061 nonwastewaters were defined: (1) low zinc subcategory (less than 15 percent); and (2) high zinc subcategory (greater than 15 percent). For the low zinc subcategory, concentration standards were promulgated based on stabilization. For the high zinc subcategory, the final standard was "No Land Disposal Based on High Temperature Metals Recovery as a Method of Treatment." Today, EPA is revising the BDAT for the high zinc nonwastewater subcategory to be re-smelting in a high temperature zinc metal recovery furnace as the method of treatment. For wastewaters, EPA is promulgating a concentration based BDAT standard based on chemical reduction and chemical precipitation.

Analysis of the data set revealed no deepwell-injected or surface-disposed volumes of K061 wastewaters requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a variance for either surface-disposed or deepwell-injected K061 wastewaters. For the First Third final rule, K061 high zinc nonwastewaters were granted a national capacity variance from the recovery requirement. Upon review of comments, EPA has determined that an extension of the interim stabilization standard while recovery processes are completed is needed. Therefore, EPA is granting a one-year extension of the stabilization standard for the high-zinc K061 subcategory.

3.3.20 Ink Production Wastes K086

RCRA hazardous waste K086 (solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead) are hazardous wastes from ink production. In the First Third rule, treatment standards were promulgated for K086 solvent wastes based on incineration and stabilization for nonwastewaters and incineration and chromium reduction, chemical precipitation and filtration for wastewaters. EPA is promulgating revised concentration standards for all K086 wastewater forms of these wastes based on biological treatment or wet-air oxidation followed by carbon adsorption or chemical oxidation followed by carbon adsorption for organics, chromium reduction followed by chemical precipitation for metals, and alkaline chlorination for cyanides. For nonwastewaters, EPA is promulgating concentration standards based on incineration for organics, followed by stabilization for metals.

Treatment data for wastes believed similar to K086 show that K086 wastes - solvent, caustic, and water washes, and their sludges - can be treated by incineration. These treatment data also show that a wide range of technologies are available to recover valuable constituents or energy from K086 wastes. As a "worst-case" analysis, EPA included all K086 wastes (Table 3-69) identified in the data set, in the capacity analysis conducted for First Third wastes. Consequently, no additional capacity will be required in today's final rule, and no capacity variance is being granted for K086 wastes.

Table 3-69 Capacity Analysis for K086 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	237,600
Stabilization of Incinerator Ash	0	2,376
Stabilization of Scrubber Water Treatment Sludge	0	2,376
Overall Total:	0	242,352

3.4 Treatment Standards for U and P Wastewaters and Nonwastewaters Excluding Metal Salts and Organo-metallics

3.4.1 Halogenated Aliphatics U044, U074, U076, U077, U078, U079, U080, U083, U084, U131, U184, U208, U209, U210, U211, U226, U227, U228, and U243

EPA is promulgating concentration-based treatment standards for the following U wastes: U044 (Chloroform), U076 (1,1-Dichloroethane), U077 (1,2-Dichloroethane), U078 (1,1-Dichloroethylene), U079 (1,2-Dichloroethylene), U080 (Methylene chloride), U083 (1,2,-Dichloropropane), U084 (1,3-Dichloropropene), U131 (Hexachloroethane), U208 (1,1,1,2-Tetrachloroethane), U209 (1,1,2,2-Tetrachloroethane), U210 (Tetrachloroethylene), U211 (Carbon tetrachloride), U226 (1,1,1-Trichloroethane), U227 (1,1,2-Trichloroethane), U228 (Trichloroethylene), and U243 (Hexachloropropene). EPA is promulgating technology-based treatment standards for U074 (1,4-Dichloro-2-butene) and U184 (Pentachloroethane). Treatment standards for U044, U074, U077, U078, U209, U210, U211, U226, U227, and U228 were originally scheduled to be promulgated in the First Third Rule; standards for U080, U083, U131, and U208 were originally scheduled to be promulgated in the Second Third rule. EPA did not promulgate standards for these wastes in either rules, and therefore the land disposal of these wastes has been subject to the "soft hammer" provisions.

U074, U079, and U084 wastes have stereoisomers identified as "cis-" and "trans-". For U084 wastes, both the "cis-" and "trans-" isomers can be quantified using SW-846 methods. Therefore, concentration-based treatment standards are being promulgated for both isomers of this compound. Since the trans- isomer is also specified in 40 CFR 261 Appendix VIII, EPA is promulgating concentration-based treatment standards only for trans-1,2-dichloroethylene for U079 wastes. For U074 wastes, these isomers cannot be quantified using SW-846 methods. Therefore, EPA is promulgating technology-based standards for U074 wastes.

For U044, U076, U077, U078, U079, U080, U083, U084, U131, U208, U209, U210, U211, U226, U227, U228, and U243, EPA is promulgating concentration standards based on biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration for nonwastewaters. For U074 and U184, EPA is promulgating wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment for wastewaters, and incineration as the method of treatment for nonwastewaters. The BDAT treatment of these wastes does not normally required stabilization of treatment residuals. However, volumes of U044, U077, and U080 mixed with other RCRA codes were reported in the data set. For these wastes, stabilization of incinerator ash and scrubber water treatment sludge may be required after incineration in order to meet all applicable treatment standards for the mixture.

As shown in Tables 3-70 through 3-85, all of the surface-disposed and deepwell-injected U044, U074, U076, U077, U078, U079, U080, U083, U131, U208, U209, U210, U211, U226, U227, and U228 wastes identified from the data set as requiring alternative treatment have been assigned to their BDAT based on the physical form and whether the wastes were wastewaters or nonwastewaters. Deepwell-injected volumes of U077, U083, and U084 were also identified; but, since these waste streams will be treated on-site, their quantities are not included in the required capacity for combustion.

During the capacity analysis for the proposed Third Third rule, EPA identified several large volumes of P and U coded wastes reported as deepwell-injected in the TSDR Survey. EPA contacted the firms reporting these large streams to further characterize the generation and current management of these large volumes. Specifically, EPA wanted to determine if these large streams were actually generated as small volumes of hazardous wastes and subsequently mixed with large volumes of other wastes.

A 75 million gallon per year stream containing U044, U080, and U211 was reported in the TSDR Survey as deepwell-injected; as was a 124 million gallon per year stream containing U226. Follow-up conversations with the facilities reporting each of these waste streams indicated that they were mixtures containing small unknown fractions of U044, U080, U211, and U226 respectively. Based on this information, EPA assumed that 100,000 gallons per year was a reasonable estimate of the volume of U044, U080, U211, and U226 generated prior to mixing with other wastes. Because the land disposal restrictions apply to wastes at the point of generation, EPA used the 100,000 gallon per year estimate as the required alternative treatment capacity for the U044, U080, U211, and U226 contained in these mixed waste streams. A discussion on this methodology is included in section 3.0.

Analysis of the data set revealed no deepwell-injected volumes of U076, U077, U078, U079, U083, U084, U131, U184, U208, U209, or U243, or surface-disposed volumes of U074, U084, U184, or U243 requiring alternative treatment capacity for this rulemaking. Based on further analysis of the data set, EPA has identified that adequate alternative treatment capacity exists for deepwell-injected volumes of U044, U074, U080, U210, U211, U226, U227, and U228 and surface-disposed volumes of U044, U076, U077, U078, U079, U080, U083, U084, U131, U208, U209, U210, U211, U226, U227, and U228 requiring alternative treatment capacity. Therefore, EPA is not granting a national capacity variance for these surface-disposed and deepwell-injected wastes.

Table 3-70 Capacity Analysis for U044 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	4,320	129,600
Combustion of Solids	5,886	0
Subtotals for BDAT:	10,206	129,600
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	24	0
Stabilization of Scrubber Water Treatment Sludge	1	0
Subtotals for non-BDAT:	25	0
Overall Total:	10,231	129,600

Table 3-71 Capacity Analysis for U074 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	50,400
Overall Total:	0	50,400

Table 3-72 Capacity Analysis for U076 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	8,880	0
Overall Total:	8,880	0

Table 3-73 Capacity Analysis for U077 (Excluding Soil and Debris)

Type of Alte[illegible] Treatme[illegible]	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	311	0
Combustion of Solids	12,240	0
Subtotals for BDAT:	12,551	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	768	0
Stabilization of Scrubber Water Treatment Sludge	38	0
Subtotals for non-BDAT:	806	0
Overall Total:	13,357	0

Table 3-74 Capacity Analysis for U078 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	480	0
Overall Total:	480	0

Table 3-75 Capacity Analysis for U079 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	16	0
Overall Total:	16	0

Table 3-76 Capacity Analysis for U080 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	2,658,635	2,754,520
Combustion of Sludges	290	0
Combustion of Solids	14,786	0
Subtotals for BDAT:	2,673,711	2,754,520
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	3	0
Stabilization of Scrubber Water Treatment Sludge	3	0
Subtotals for non-BDAT:	6	0
Overall Total:	2,673,717	2,754,520

Table 3-77 Capacity Analysis for U083 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	3,920	0
Overall Total:	3,920	0

Table 3-78 Capacity Analysis for U131 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	103	0
Combustion of Solids	144,000	0
Overall Total:	144,103	0

Table 3-79 Capacity Analysis for U208 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	48	0
Overall Total:	48	0

Table 3-80 Capacity Analysis for U209 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	4,800	0
Overall Total:	4,800	0

Table 3-81 Capacity Analysis for U210 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	2,331	1,000,000
Combustion of Sludges	123	0
Combustion of Solids	4,159	0
Overall Total:	6,613	1,000,000

Table 3-82 Capacity Analysis for U211 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	12,551	111,520
Combustion of Sludges	171	0
Combustion of Solids	2,400	0
Overall Total:	15,122	111,520

Table 3-83 Capacity Analysis for U226 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	5,640	100,000
Combustion of Sludges	384	0
Combustion of Solids	9,976	0
Overall Total:	16,000	100,000

Table 3-84 Capacity Analysis for U227 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	2,658,120	2,654,520
Overall Total:	2,658,120	2,654,520

Table 3-85 Capacity Analysis for U228 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	1,493	1,200
Combustion of Sludges	261	0
Combustion of Solids	3,660	0
Overall Total:	5,414	1,200

3.4.2 Halogenated Pesticides and Chlorobenzenes

This category of halogenated organics consists of seven P wastes and 19 U wastes. EPA grouped these waste codes together because the primary constituents for which the wastes were listed are HOCs that are (or have been) primarily used as pesticides. This category is divided into the following groups: chlorinated norbornane and norbornene derivatives; chlorobenzenes, chlorophenoxycarboxylic acids and derivatives; chlorinated diphenyls; and lindane and hexachlorobutadiene.

3.4.2.1 Chlorinated Norbornane and Norbornene Derivatives
P004, P037, P050, P051, P059, P060, P123, U036, U130, and U142

EPA has grouped these ten waste codes together because they all contain or represent halogenated pesticides that have the structural classification known as chlorinated norbornane and norbornene derivatives. The P wastes are listed for acute toxicity. The U wastes are listed for toxicity. For all of these wastes except U130, EPA is promulgating concentration standards based on biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration for nonwastewaters. For U130, EPA is promulgating wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment for wastewaters, and incineration as the method of treatment for nonwastewaters.

As shown in Tables 3-86 through 3-93 the surface-disposed P004, P037, P050, P051, P059, P123, U036, and U142, and deepwell-injected P050, P051, and P059 were assigned to the BDAT technology based on the physical form of the waste and whether it was a wastewater or nonwastewater.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed and deepwell-injected volumes of these wastes requiring alternative treatment. In addition, analysis of the data set revealed no surface-disposed or deepwell-injected volumes of P060 and U130 wastes. Therefore, EPA is not granting a national capacity variance for any of these surface-disposed or deepwell-injected wastes.

Table 3-86 Capacity Analysis for P004 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	1,981	0
Overall Total:	1,981	0

Table 3-87 Capacity Analysis for P037 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	6,633	0
Overall Total:	6,633	0

Table 3-88 Capacity Analysis for P050 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	377,533
Combustion of Solids	6,065	0
Overall Total:	6,065	377,533

Table 3-89 Capacity Analysis for P051 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	9,216
Combustion of Solids	6,404	0
Overall Total:	6,404	9,216

Table 3-90 Capacity Analysis for P059 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	377,533
Combustion of Solids	1,307	0
Overall Total:	1,307	377,533

Table 3-91 Capacity Analysis for P123 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	1,680	0
Overall Total:	1,680	0

Table 3-92 Capacity Analysis for U036 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	7,821	0
Overall Total:	7,821	0

Table 3-93 Capacity Analysis for U142 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	240	0
Overall Total:	240	0

3.4.2.2 Chlorobenzenes U037, U070, U071, U072, U127, U183, U185, and U207

RCRA hazardous wastes U037 (chlorobenzenes), U070 (1,2-dichlorobenzene), U071 (1,3-dichlorobenzene), U072 (1,4-dichlorobenzene), U127 (hexachlorobenzene), U183 (pentachlorobenzene), U185 (pentachloronitrobenzene), and U207 (1,2,4,5-tetrachlorobenzene) are organic compounds listed as hazardous for toxicity. EPA is promulgating concentration standards based on incineration for the nonwastewater forms of these wastes, and biological treatment, or wet-air oxidation followed by carbon adsorption for the wastewater forms.

As shown in Table 3-94 through 3-99 the surface-disposed U037, U070, U071, U072, U127, and U185, and deepwell-injected U037, U070, and U185 have been assigned to the BDAT technology based on their physical form and whether they were wastewaters or nonwastewaters.

During the capacity analysis for the proposed Third Third rule, EPA identified several large volumes of P and U coded wastes reported as deepwell-injected in the TSDR Survey. EPA contacted the firms reporting these large streams to further characterize the generation and current management of these large streams. Specifically, EPA wanted to determine if these large streams were actually generated as small volumes of hazardous wastes and subsequently mixed with large volumes of other wastes.

A deepwell-injected volume of 28 million gallons per year containing U070 was reported in the TSDR Survey. Follow-up conversations with the facility reporting this waste stream indicated that the stream was a mixture containing a small unknown fraction of U070. Based on this information, EPA assumed that 100,000 gallons per year was a reasonable estimate of the volume of U070 generated prior to mixing with other wastes. Because the land disposal restrictions apply to wastes at the point of generation, EPA used the 100,000 gallon per year estimate as the required alternative treatment capacity for the U070 contained in this mixed waste stream. A discussion on this methodology is included in section 3.0.

Analysis of the data set revealed no surface-disposed U183 and U207, or deepwell-injected U071, U072, U127, U183, and U207 requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these surface-disposed and deepwell-injected wastes.

Based on further analysis of the data set, EPA has identified that adequate alternative treatment capacity exists for the surface-disposed volumes of U037, U070, U071, U072, U127, and U185, and deepwell-injected volumes of U037, U070, and U185. Therefore, EPA is not granting a national capacity variance for these surface-disposed and deepwell-injected wastes.

Table 3-94 Capacity Analysis for U037 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	33,120
Combustion of Solids	5,844	0
Overall Total:	5,844	33,120

Table 3-95 Capacity Analysis for U070 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	456	100,000
Combustion of Solids	53	0
Overall Total:	509	100,000

Table 3-96 Capacity Analysis for U071 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	800	0
Overall Total:	800	0

Table 3-97 Capacity Analysis for U072 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	219,865	0
Overall Total:	219,865	0

Table 3-98 Capacity Analysis for U127 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	743	0
Overall Total:	743	0

Table 3-99 Capacity Analysis for U185 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	1,000,000
Combustion of Solids	37	0
Overall Total:	37	1,000,000

3.4.2.3 Chlorophenoxycarboxylic Acids and Derivatives U240

RCRA hazardous waste U240 (2,4-dichlorophenoxyacetic acid, salts and esters) is a halogenated organic waste listed for toxicity. For U240 (2,4-D acetic acid), EPA is promulgating concentration standards based on biological treatment or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration for nonwastewaters. For U240 (2,4-D salts and esters), EPA is promulgating wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment for wastewaters, and incineration as the method of treatment for nonwastewaters. EPA believes that the nonwastewater forms of U240 are not amenable to fuel substitution.

As shown in Table 3-100, all of the surface-disposed U240 wastes identified from the data set as requiring alternative treatment have been assigned to one of the BDAT technologies based on the physical form of the waste and whether the waste was a wastewater or nonwastewater.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed U240 wastes requiring alternative treatment. No deepwell-injected volumes of U240 requiring alternative treatment were identified. Therefore, EPA is not granting a national capacity variance for deepwell-injected or surface-disposed U240 wastes.

Table 3-100 Capacity Analysis for U240 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Sludges	1,440	0
Incineration of Solids	55,870	0
Overall Total:	57,310	0

3.4.2.4 Chlorinated Diphenyls U038, U060, U061, U132, and U247

The following wastes, U038, U060, U061, U132, and U247, have been grouped together because they all contain halogenated pesticides classified as chlorinated diphenyl compounds. RCRA hazardous waste U038 (Chlorobenzilate), U060 (DDD), U061 (DDT), U132 (Hexachlorophene), and U247 (Methoxychlor) are halogenated organic wastes listed for toxicity. Treatment standards for U060 and U061 were originally scheduled to be promulgated in the Second Third and First Third rule, respectively. Because EPA did not promulgate standards by the statutory deadline for these wastes, their land disposal has been subject to the "soft hammer" provisions.

Today EPA is promulgating treatment standards for these soft hammer wastes and the remaining Third Third wastes in this category. (U060 (DDD) and U061 (DDT) can both exist as one of two isomers, which can be analyzed by SW-846 for organochlorine pesticides. EPA is promulgating treatment standards for U060 and U061 based on analyses for both isomers.) For U060, U061, and U247, EPA is promulgating concentration-based treatment standards based on biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration for nonwastewaters. For U038, EPA is promulgating concentration standards based on biological treatment, or wet air oxidation followed by carbon adsorption for wastewaters, and incineration as the method of treatment for nonwastewaters. For U132, EPA is promulgating wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment for wastewaters, and incineration as the method of treatment for nonwastewaters.

As shown in Tables 3-101 and 3-102, all of the surface-disposed U061 and U247 wastes identified from the data set as requiring alternative treatment have been assigned to one of the BDAT technologies based on the physical form of the waste and whether the waste was a wastewater or nonwastewater. EPA has identified that adequate alternative treatment capacity exists for surface-disposed volumes of U061 and U247 requiring alternative treatment capacity. Therefore, EPA is not granting a national capacity variance for these surface-disposed wastes.

Analysis of the data set revealed no deepwell-injected volumes of U038, U060, U061, U132, or U247; or surface-disposed volumes of U038, U060, or U132 requiring alternative treatment capacity for this rulemaking. Therefore EPA is not granting a national capacity variance for these deepwell-injected and surface-disposed wastes.

Table 3-101 Capacity Analysis for U061 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	6,326	0
Overall Total:	6,326	0

Table 3-102 Capacity Analysis for U247 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	93	0
Combustion of Solids	336	0
Overall Total:	429	0

3.4.2.5 Lindane and Hexachlorobutadiene U128, and U129

Both of these chemicals are chlorinated aliphatics and are typically used as pesticides or in the production of pesticides. RCRA hazardous wastes U128 (Hexachlorobutadiene) and U129 (Lindane) are listed for their toxicity. Treatment standards for U128 and U129 were originally scheduled to be promulgated in the Second Third and First Third rule, respectively; because EPA did not promulgate standards by the statutory deadline for these wastes, their land disposal has been subject to the "soft hammer" provisions. Today EPA is promulgating concentration-based treatment standards based on detection limits for hexachlorobutadiene using analysis of total constituent concentrations for U128.

U129 is the most common isomer of hexachlorocyclohexane (BHC). Typical commercial mixtures of Lindane were manufactured such that three other isomers were present in reasonably high concentrations: alpha-, beta-, and delta-BHC. EPA is promulgating concentration-based standards for all four isomers for wastes identifies as U129. For both U128 and U129, EPA is promulgating these concentration standards based on biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration for nonwastewaters.

As shown in Table 3-103, the surface-disposed U129 wastes identified from the data set as requiring alternative treatment have been assigned to the BDAT based on the physical form of the waste.

Based on data set data, EPA has identified that adequate treatment capacity exists for the surface-disposed U129 wastes requiring alternative treatment, and no deepwell-injected volumes of U129 wastes requiring alternative treatment were identified. Therefore, EPA is not granting a national capacity variance for U129 wastes.

No deepwell-injected or surface-disposed U128 volumes requiring alternative treatment capacity have been identified. Therefore, EPA is not granting a national capacity variance to deepwell-injected or surface-disposed U128 wastes.

Table 3-103 Capacity Analysis for U129 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	1,597	0
Overall Total:	1,597	0

3.4.3 Halogenated Phenolics U039, U048, U081, and U082

EPA has grouped U039, U048, U081, and U082 together because all of the chemicals represented by these waste codes are mono- and di-substituted phenols.

U039, U048, U081, and U082

RCRA hazardous wastes U039 (p-Chloro-m-cresol), U048 (2-Chlorophenol), U081 (2,4-Dichlorophenol), and U082 (2,6-Dichlorophenol) are listed for their toxicity. EPA is promulgating concentration-based standards for U039, U048, U081, and U082. These concentration standards are based on biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration for nonwastewaters.

As shown in Tables 3-104 through 3-107 the surface-disposed U039, U048, U081, and U082 wastes identified from the data set as requiring alternative treatment have been assigned to the BDAT based on the physical form of the wastes and whether the wastes were wastewaters or nonwastewaters.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed U039, U048, U081, and U082 wastes requiring alternative treatment. No deepwell-injected U039, U048, U081, or U082 volumes requiring alternative treatment capacity have been identified. Therefore, EPA is not granting a national capacity variance for deepwell-injected and surface-disposed U039, U048, U081, and U082 wastes.

Table 3-104 Capacity Analysis for U039 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	61	0
Overall Total:	61	0

Table 3-105 Capacity Analysis for U048 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	183	0
Combustion of Solids	37	0
Overall Total:	220	0

Table 3-106 Capacity Analysis for U081 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	11,381	0
Overall Total:	11,381	0

Table 3-107 Capacity Analysis for U082 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	19	0
Overall Total:	19	0

3.4.4 Brominated Organics P017, U029, U030, U066, U067, U068, and U225

The following chemicals, P017, U029, U030, U066, U067, U068, and U225 are all hydrocarbons or oxygenated hydrocarbons that contain the halogen bromine.

P017

RCRA hazardous waste P017 (Bromoacetone) is listed for acute toxicity. P017 is relatively unstable in water and therefore cannot be reliably analyzed in wastewaters or other residues where contact with water might be expected. EPA is promulgating incineration as the method of treatment for nonwastewaters, and wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment for P017 wastewaters.

Analysis of the data set revealed no volumes of deepwell-injected or surface-disposed P017 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for deepwell-injected or surface-disposed P017 wastes.

U029, U030, U066, U067, U068, and U225

U029 (Methyl bromide), U030 (4-Bromophenyl phenyl ether), U066 (1,2-Dibromo-3-chloropropane), U067 (Ethylene dibromide (EDB)), U068 (Dibromomethane), and U225 (Bromoform) are listed hazardous wastes because of their toxicity. Treatment standards for U029, U066 and U067 were originally scheduled to be promulgated in the First Third rule; because EPA did not promulgate standards by the statutory deadline for these wastes, their land disposal has been subject to the "soft hammer" provisions. Today EPA is promulgating concentration-based standards for these soft hammer wastes and the remaining Third Third wastes in this category. These concentration standards are based on biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration for nonwastewaters.

As shown in Tables 3-108 through 3-112, the surface-disposed U029, U030, U066, U067, and U225 wastes identified from the data set as requiring alternative treatment have been assigned to their BDAT based on the physical form of the wastes and whether the wastes were wastewaters or nonwastewaters.

Analysis of the data set revealed no deepwell-injected volumes of U029, U030, U066, U067, U068, or U225 or surface-disposed volumes of U068 requiring alternative treatment capacity for this rulemaking. Therefore EPA is not granting a national capacity variance for these deepwell-injected and surface-disposed wastes.

Based on further analysis of the data set, EPA has determined that adequate alternative treatment capacity exists for surface-disposed volumes of U029, U030, U066, U067, and U225 requiring alternative treatment capacity. Therefore, EPA is not granting a national capacity variance for these surface-disposed wastes.

Table 3-108 Capacity Analysis for U029 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	665	0
Overall Total:	665	0

Table 3-109 Capacity Analysis for U030 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	339	0
Overall Total:	339	0

Table 3-110 Capacity Analysis for U066 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	1,324	0
Overall Total:	1,324	0

Table 3-111 Capacity Analysis for U067 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	26	0
Combustion of Solids	48	0
Overall Total:	74	0

Table 3-112 Capacity Analysis for U225 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	12	0
Overall Total:	12	0

3.4.5 Miscellaneous Halogenated Organics

EPA has grouped all of the remaining halogenated organics together into a general category identified as miscellaneous halogenated organics. These U and P wastes represent a wide range of chemicals produced in a variety of individual processes. These wastes have been divided into seven groups: chlorinated diphenyls; chlorinated polynuclear aromatics; chlorinated amides and amines; chlorinated methylbenzenes; halogenated aliphatics; halogenated aldehydes, ethers, and esters; and halogenated organo-sulfur compounds.

3.4.5.1 Chlorinated Diphenyls U073 and U158

There are two miscellaneous HOCs that are classified as chlorinated diphenyls: U073 (3,3-dichlorobenzidine) and U158 (4,4-Methylene-bis-(2-chloroaniline)). Treatment standards for U073 and U158 were originally scheduled to be promulgated in the Second Third and First Third rules, respectively; because EPA did not promulgate standards by the statutory deadline for these wastes, their land disposal has been subject to the "soft hammer" provisions Today EPA is promulgating concentration-based standards for U158 wastewaters based on biological treatment or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration for nonwastewaters. For U073, EPA is promulgating wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment for wastewaters; and incineration as the method of treatment for nonwastewters.

As shown in Tables 3-113 and 3-114, the surface-disposed U073 and U158 wastes identified from the data set as requiring alternative treatment have been assigned to the BDAT based on the physical form of the waste and whether the waste was a wastewater or nonwastewater. A portion of U158 waste has also been assigned to stabilization, which indicates that U158 was mixed with another waste code requiring stabilization for treatment. Therefore, the portion of U158 waste that was mixed with another code was sent to stabilization in order to treat the waste stream completely.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed U073 and U158 wastes requiring alternative treatment, and no deepwell-injected volumes of U073 or U158 requiring alternative treatment were identified. Therefore, EPA is not granting a national capacity variance for deepwell-injected or surface-disposed U073 or U158 wastes.

Table 3-113 Capacity Analysis for U073 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	240	0
Combustion of Solids	225	0
Overall Total:	465	0

Table 3-114 Capacity Analysis for U158 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	41	0
Combustion of Solids	252,464	0
Subtotals for BDAT:	252,505	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	49,248	0
Stabilization of Scrubber Water Treatment Sludge	2,462	0
Subtotals for non-BDAT:	51,710	0
Overall Total:	304,215	0

3.4.5.2 Chlorinated Polynuclear Aromatics U026 and U047

U026 (Chloronaphazine) and U047 (2-chloronaphthalene) are both classified as chlorinated polynuclear aromatic hydrocarbons. Treatment standards for U026 and U047 were originally scheduled to be promulgated in the Second Third rule; because EPA did not promulgate standards by the statutory deadline for these wastes, their land disposal has been subject to the "soft hammer" provisions.

EPA is promulgating incineration as the method of treatment for U026 nonwastewaters, and wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment for wastewaters. EPA is promulgating concentration-based standards for U047. These standards are based on biological treatment or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration for nonwastewaters. As shown in Table 3-115, the surface-disposed U047 wastes identified from the data set as requiring alternative treatment have been assigned to the BDAT.

Analysis of the data set revealed no deepwell-injected volumes of U026 or U047, or surface-disposed volumes of U026 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for deepwell-injected or surface-disposed U026 or U047.

Table 3-115 Capacity Analysis for U047 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	72	0
Overall Total:	72	0

3.4.5.3 Chlorinated Amides and Amines P024, P057, U049, U097, U192, and U222

These following wastes, P024, P057, U049, U097, U192, and U222, are grouped together because they contain an amide or amine group attached to a relatively simple, hydrocarbon structure.

P024 and U192

RCRA hazardous wastes P024 (p-Chloroaniline) and U192 (Pronamide) are listed as hazardous for acute toxicity and toxicity, respectively. Treatment standards for U192 were originally scheduled to be promulgated in the First Third rule; because EPA did not promulgate standards by the statutory deadline for these wastes, their land disposal has been subject to the "soft hammer" provisions. Concentration-based standards for P024 and U192 wastewaters and nonwastewaters are being promulgated today based on biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration for nonwastewaters.

As shown in Tables 3-116 and 3-118, the surface-disposed P024 and U192 and the deepwell-injected U192 wastes identified from the data set as requiring alternative treatment have been assigned to their BDAT based on the physical form of the waste and whether the waste was a wastewater or nonwastewater.

During the capacity analysis for the proposed Third Third rule, EPA identified several large volumes of P and U coded wastes reported as deepwell-injected in the TSDR Survey. EPA contacted the firms reporting these large streams to further characterize the generation and current management of these large volumes. Specifically, EPA wanted to determine if these large streams were actually generated as small volumes of hazardous wastes and subsequently mixed with large volumes of other wastes.

A deepwell injected volume of 189 million gallons per year containing U192 was reported in the TSDR Survey. Follow-up conversations with the facility reporting this waste stream indicated that the stream was a mixture containing a small unknown fraction of U192. Based on this information, EPA assumed that 100,000 gallons per year was a reasonable estimate of the volume of U192 generated prior to mixing with other wastes. Because the land disposal restrictions apply to wastes at the point of generation, EPA used the 100,000 gallon per year estimate as the required alternative treatment capacity for the U192 contained in this mixed waste stream. A discussion on this methodology is included in section 3.0.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed P024 and U192 and deepwell-injected U192 wastes requiring alternative treatment. No deepwell-injected U192 wastes requiring alternative treatment were identified. Therefore, EPA is not granting a national capacity variance for these wastes.

P057, U049, U097, and U222

Treatment standards for P057 (2-Fluoroacetamide), U049 (4-Chloro-o-toluidine hydrochloride), and U097 (Dimethylcarbomyl chloride) were originally scheduled to be promulgated in the Second Third rule; because EPA did not promulgate standards by the statutory deadline for these wastes, their land disposal has been subject to the "soft hammer" provisions.

Today EPA is promulgating incineration as a method of treatment for P057, U049, U097, and U222 (o-Toluidine hydrochloride) nonwastewaters. For the wastewater form of these wastes, EPA is promulgating wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment.

As shown in Table 3-117, the deepwell-injected P057 wastes identified from the data set as requiring alternative treatment have been assigned to their BDAT based on the physical form of the wastes.

Based on the data set data, EPA has identified adequate alternative treatment capacity for the deepwell-injected P057 wastes requiring alternative treatment. No surface-disposed P057 wastes requiring alternative treatment capacity were identified. Therefore, EPA is not granting a national capacity variance for P057 wastes.

Analysis of the data set revealed no deepwell-injected or surface-disposed volumes of U049, U097, and U222 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-116 Capacity Analysis for P024 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	480	0
Combustion of Solids	3,120	0
Overall Total:	3,600	0

Table 3-117 Capacity Analysis for P057 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	9,216
Overall Total:	0	9,216

Table 3-118 Capacity Analysis for U192 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	100,000
Combustion of Solids	2,438	0
Overall Total:	2,438	100,000

3.4.5.4 Chlorinated Methylbenzenes P028 and U017

P028 (benzyl chloride) and U017 (benzal chloride) have been grouped together because they both consist of a toluene moiety with chlorines attached to the methyl group.

U017

RCRA hazardous waste U017 (benzal chloride) is listed for toxicity. EPA is promulgating incineration as a method of treatment for nonwastewater forms of U017, and wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment for wastewaters.

No deepwell-injected or surface-disposed volumes of U017 requiring alternative treatment were reported in the data set. Therefore, EPA is not granting a national capacity variance for deepwell-injected or surface-disposed U017.

P028

For P028 (benzyl chloride), EPA is proposing incineration as a method of treatment for nonwastewaters, and wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment for wastewaters.

As shown in Table 3-119, the surface-disposed P028 wastes identified from the data set as requiring alternative treatment have been assigned to the BDAT based on the physical form of the waste and whether the waste was a wastewater or nonwastewater. No deepwell volumes of P028 were reported in the data set.

Based on the data set data, EPA has identified that adequate treatment capacity exists for the surface-disposed P028 wastes requiring alternative treatment. Therefore, EPA is not granting a national capacity variance for surface-disposed P028 wastes. In addition, since analysis of the data set revealed no deepwell-injected volumes of P028 requiring alternative treatment capacity for this rulemaking, EPA is not granting a national capacity variance for deepwell-injected P028 wastes.

Table 3-119 Capacity Analysis for P028 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	720	0
Overall Total:	720	0

3.4.5.5 Halogenated Aliphatics P027, U043, U045, U075, U121, and U138

This subcategory of miscellaneous HOCs consists of six chemicals that have one, two, or three carbon atoms with at least one chlorine, fluorine, iodine or nitrile group attached.

P027

Treatment standards for P027 (3-Chloropropionitrile) were originally scheduled to be promulgated in the Second Third rule. Because EPA did not promulgate standards at that time, land disposal of P027 has been subject to the "soft hammer" provisions. Today EPA is promulgating incineration as the method of treatment for P027 nonwastewaters; and wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment for wastewaters.

Analysis of the data set revealed no deepwell-injected or surface-disposed volumes of P027 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for P027.

U043, U045, U075, U121, and U138

Treatment standards for U043 (Vinyl chloride) and U138 (Iodomethane) were originally scheduled to be promulgated in the First Third and the Second Third rules, respectively. Because EPA did not promulgate standards, their land disposal has been subject to the "soft hammer" provisions.

Today EPA is proposing concentration-based treatment standards for U043, U045 (Chloromethane), U075 (Dichlorodifluoromethane), U121 (Fluorotrichloromethane), and U138. These concentration standards are based on biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration for nonwastewaters.

As shown in Tables 3-120 through 3-124, only surface-disposed U043, U075, and U121 and deepwell-injected U045 and U138 wastes identified from the data set as requiring alternative treatment have been assigned to the BDAT based on the physical form of the waste.

During the capacity analysis for the proposed Third Third rule, EPA identified several large volumes of P and U coded wastes reported as deepwell-injected in the TSDR Survey. EPA contacted the firms reporting these large streams to further characterize the generation and current management of these large volumes. Specifically, EPA wanted to determine if these large streams were actually generated as small volumes of hazardous wastes and subsequently mixed with large volumes of other wastes.

A deepwell injected volume of 124 million gallons per year containing U138 was reported in the TSDR Survey. Follow-up conversations with the facility reporting this waste stream indicated that the stream was a mixture containing a small unknown fraction of U138. Based on this information, EPA assumed that 100,000 gallons per year was a reasonable estimate of the volume of U138 generated prior to mixing with other wastes. Because the land disposal restrictions apply to wastes at the point of generation, EPA used the 100,000 gallon per year estimate as the required alternative treatment capacity for the U138 contained in this mixed waste stream. A discussion on this methodology is included in section 3.0.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed U043, U075, U121 and deepwell-injected U045 and U138 wastes requiring alternative treatment. Therefore, EPA is not granting a national capacity variance for these wastes.

Further analysis of the data set revealed no deepwell-injected volumes of U043, U075, and U121 wastes and no surface-disposed U045 and U138 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-120 Capacity Analysis for U043 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	5,480	0
Combustion of Solids	240	0
Overall Total:	5,720	0

Table 3-121 Capacity Analysis for U045 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	17,600
Overall Total:	0	17,600

Table 3-122 Capacity Analysis for U075 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	240	0
Overall Total:	240	0

Table 3-123 Capacity Analysis for U121 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	370	0
Overall Total:	370	0

Table 3-124 Capacity Analysis for U138 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	100,000
Overall Total:	0	100,000

3.4.5.6 Halogenated Aldehydes, Ethers and Esters
P016, P023, P058, P095, U006, U024, U025, U027, U033, U034, U041, U042, U046, and U156

This subcategory of miscellaneous halogenated organics consists of fourteen chemicals grouped together because they are relatively simple oxygenated hydrocarbons with various degrees of halogenation. The oxygenated hydrocarbons include ethers, esters, and aldehydes.

P016, P023, P058, P095, U006, U033, U034, U041, U042, U046, and U156

RCRA hazardous wastes P016 (bis-Chloromethyl ether), P023 (Chloroacetaldehyde), P058 (Fluoracetic acid, sodium salt), and P095 (Phosgene), are halogenated organic wastes listed as hazardous for acute toxicity. U006 (Acetyl Chloride), U033 (Carbonyl fluoride), U034 (Trichloroacetaldehyde), U041 (n-Chloro-2,3-epoxypropane), U042 (2-Chloroethyl vinyl ether), U046 (Chloromethyl methyl ether), and U156 (Methyl chlorocarbonate) are halogenated organic wastes listed as hazardous for toxicity. Treatment standards for P016, P058, U041, and U046 were originally scheduled to be promulgated in the First Third rule. Because EPA did not promulgate standards, their land disposal has been subject to the "soft hammer" provisions.

EPA has identified the BDAT for these wastes to be wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment for wastewaters; and incineration as the method of treatment for nonwastewaters. EPA has identified that the nonwastewater forms of these wastes are not amenable to fuel substitution.

As shown in Tables 3-125 through 3-128, the surface-disposed P058, U006, and U156 and deepwell-injected P058, and U034, wastes requiring alternative treatment have been assigned to one of the BDAT technologies based on whether the waste was described as a wastewater or nonwastewater. A portion of U006 waste has also been assigned to stabilization, which indicates that U006 was mixed with another waste code requiring stabilization for treatment.

Therefore, the portion of U006 waste that was mixed with another code was sent to stabilization in order to treat the waste stream completely.

Based on the data set, EPA has identified that adequate treatment capacity exists for surface-disposed P058, U006, and U156 and deepwell-injected P058 and U034 wastes requiring alternative treatment. No surface-disposed U034 or deepwell-injected U006 or U156 requiring alternative treatment for this rulemaking were identified. Therefore, EPA is not granting a national capacity variance for these wastes.

Analysis of the data set revealed no deepwell-injected or surface-disposed volumes of P016, P023, P095, U033, U041, U042, and U046 wastes requiring alternative treatment capacity for this rulemaking. A deepwell-injected volume of U041 was identified, but since it will be treated on-site, this volume was not included in the required capacity for any of the appropriate technologies. Therefore, EPA is not granting a national capacity variance for these wastes.

U024, U025, and U027

Of the fourteen chemicals in this category, only U024 (bis 2-chloroethoxymethane), U025 (dichloroethyl ether), and U027 (bis-2-chloroisopropyl ether) are amenable to quantification in treatment residuals by SW-846 methods. Treatment standards for U025 were originally scheduled to be promulgated in the Second Third rule. Because EPA did not promulgate standards at that time, land disposal of these wastes has been subject to the "soft hammer" provisions. For U024, U025, and U027, EPA is promulgating concentration-based standards. These concentration standards are based on biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration for nonwastewaters.

Analysis of the data set revealed no deepwell-injected or surface-disposed volumes of U024, U025 and U027 wastes requiring alternative treatment for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-125 Capacity Analysis for P058 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	80	0
Wet Air Oxidation followed by Carbon Adsorption	0	12,720
Overall Total:	80	12,720

Table 3-126 Capacity Analysis for U006 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	503	0
Subtotals for BDAT:	503	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	5	0
Stabilization of Scrubber Water Treatment Sludge	5	0
Subtotals for non-BDAT:	10	0
Overall Total:	513	0

Table 3-127 Capacity Analysis for U034 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	17,600
Overall Total:	0	17,600

Table 3-128 Capacity Analysis for U156 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	1,440	0
Overall Total:	1,440	0

3.4.5.7 Chlorinated Organo-Sulfur P026, P118, U020, and U062

The following wastes, P026 (1-(o-Chlorophenyl) thiourea), P118 (Trichloromethanethiol), U020 (Benzenesulfonyl chloride), and U062 (Diallate), have been grouped together because they are chlorinated organo-sulfur chemicals. Treatment standards for P026, U020, U062 were originally scheduled to be promulgated in the Second Third rule. Because EPA did not promulgate standards, land disposal of these wastes has been subject to the "soft hammer" provisions.

EPA is promulgating incineration as a method of treatment for nonwastewaters, and wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment for nonwasetwaters for all four of these wastes.

Analysis of the data set revealed no deepwell-injected or surface-disposed volumes of P026, P118, U020, and U062 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

3.4.6 Additional Organic Wastes

Aromatics and Other Hydrocarbons U019, U055, U056, U186, U220, U239

U019, U220, and U239

RCRA hazardous wastes U019 (benzene), U220 (toluene), and U239 (xylene) are organic compounds listed as hazardous for toxicity. EPA is promulgating concentration standards based on incineration for the nonwastewater forms of these wastes, and biological treatment, or wet-air oxidation followed by carbon adsorption for the wastewater forms.

As shown in Tables 3-129, 3-132, and 3-133, most of the U019, U220, and U239 wastes requiring alternative treatment have been assigned to the appropriate technology based on the physical form of the waste. The BDAT treatment for the nonwastewater forms of these wastes does not normally require stabilization of incinerator ash or scrubber water treatment sludge; however, several U019, U220, and U239 waste streams were described as also containing metal-bearing wastes. For these waste streams, EPA believes that stabilization of the incinerator ash and scrubber water treatment sludge will be necessary to meet the applicable metals treatment standards. Additionally, one small U019 waste stream was described as containing a mercury-containing waste. This waste stream was assigned to mercury retorting followed by stabilization of the retort slag. EPA believes that this type of treatment will be capable of meeting the applicable treatment standards for this waste stream.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed and deepwell-injected U019, U220, and U239 wastes requiring alternative treatment. Therefore, EPA is not granting a national capacity variance for these wastes.

U055, U056, and U186

RCRA hazardous wastes U055 (cumene), U056 (cyclohexane), and U186 (1,3-pentadiene) are organic compounds listed as hazardous for toxicity. EPA has identified the BDAT technology for these wastes to be wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment for wastewaters, and incineration or fuel substitution as methods of treatment for nonwastewaters.

As shown in Tables 3-130 and 3-131, the U055 and U056 wastes requiring alternative treatment were assigned to one of the BDAT technologies (i.e., incineration).

During the capacity analysis for the proposed Third Third rule, EPA identified several large volumes of P and U coded wastes reported as deepwell-injected in the TSDR Survey. EPA contacted the firms reporting these large streams to further characterize the generation and current management of these large volumes. Specifically, EPA wanted to determine if these large streams were actually generated as small volumes of hazardous wastes and subsequently mixed with large volumes of other wastes.

A deepwell-injected volume of 60 million gallons per year containing U055 was reported in the TSDR Survey. Follow-up conversations with the facility reporting this waste stream indicated that the stream was a mixture containing a small unknown fraction of U055. Based on this information, EPA assumed that 100,000 gallons per year was a reasonable estimate of the volume of U055 generated prior to mixing with other wastes. Because the land disposal restrictions apply to wastes at the point of generation, EPA used the 100,000 gallon per year estimate as the required alternative treatment capacity for the U055 contained in this mixed waste stream. A discussion on this methodology is included in section 3.0.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed and deepwell-injected U055 and U056 wastes requiring alternative treatment. Therefore, EPA is not granting a national capacity variance for these wastes.

Also based on analysis of the data set, EPA has identified that no volumes of U186 will require alternative treatment for this rulemaking and therefore, EPA is not granting a national capacity variance for this waste.

Table 3-129 Capacity Analysis for U019 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Biological Treatment	0	4,320
Combustion of Liquids	3,935	775,440
Combustion of Sludges	2,018	0
Combustion of Solids	928	0
Subtotals for BDAT:	6,881	779,760
Quantities Included in Mixtures and Assigned to Additional Technology:		
Mercury Retorting	6	0
Stabilization of Incinerator Ash	39	0
Stabilization of Retort Slag	63	0
Stabilization of Scrubber Water Treatment Sludge	39	0
Subtotals for non-BDAT:	147	0
Overall Total:	7,028	779,760

Table 3-130 Capacity Analysis for U055 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	100,000
Incineration of Solids	205,953	0
Overall Total:	205,953	100,000

Table 3-131 Capacity Analysis for U056 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	12,624
Incineration of Solids	789	0
Overall Total:	789	12,624

Table 3-132 Capacity Analysis for U220 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Biological Treatment	0	9,240
Combustion of Liquids	31,346	20,290
Combustion of Sludges	12,716	0
Combustion of Solids	89,807	0
Subtotals for BDAT:	133,869	29,530
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	40	0
Stabilization of Scrubber Water Treatment Sludge	40	0
Subtotals for non-BDAT:	80	0
Overall Total:	133,949	29,530

Table 3-133 Capacity Analysis for U239 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Biological Treatment	0	90,960
Combustion of Liquids	158,147	69,360
Combustion of Sludges	12,469	0
Combustion of Solids	65,271	0
Subtotals for BDAT:	235,887	160,320
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	114	0
Stabilization of Scrubber Water Treatment Sludge	44	0
Subtotals for non-BDAT:	158	0
Overall Total:	236,045	160,320

3.4.7 Polynuclear Aromatic Hydrocarbons
U005, U016, U018, U022, U050, U063, U064, U094, U120, U137, U157, and U165

RCRA hazardous wastes U005 (2-acetylaminofluorene), U022 (benzo(a) pyrene), U120 (fluoranthene), U157 (3-methylchloanthrene), and U165 (naphthalene) are polynuclear aromatic hydrocarbons listed as hazardous for toxicity. EPA is promulgating concentration standards for these wastes based on incineration for nonwastewaters, and biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters.

As shown in Tables 3-134, 3-135, and 3-136, the U005, U022, and U120 wastes requiring alternative treatment are surface-disposed wastes. Most of these wastes have been assigned to the appropriate technology based on the physical form of the waste. As shown in Table 3-137 and 3-138, the U157 and U165 wastes requiring alternative treatment are also deepwell-injected. A small amount of U022 was assigned to vitrification as it was part of a mixture requiring vitrification. Although EPA believes no capacity exists for vitrification, EPA is not proposing to grant U022 nonwastewaters a variance because this treatment is not necessary for the U022 treatment standards.

During the capacity analysis for the proposed Third Third rule, EPA identified several large volumes of P and U coded wastes reported as deepwell-injected in the TSDR Survey. EPA contacted the firms reporting these large streams to further characterize the generation and current management of these large volumes. Specifically, EPA wanted to determine if these large streams were actually generated as small volumes of hazardous wastes and subsequently mixed with large volumes of other wastes.

A deepwell-injected volume of 75 million gallons per year containing U157 was reported in the TSDR Survey. Follow-up conversations with the facility reporting this waste stream indicated that the stream was a mixture containing a small unknown fraction of U157. Based on this information, EPA assumed that 100,000 gallons per year was a reasonable estimate of the volume of U157 generated prior to mixing with other wastes. Because the land disposal restrictions apply to wastes at the point of generation, EPA used the 100,000 gallon per year estimate as the required alternative treatment capacity for the U157 contained in this mixed waste stream. A discussion on this methodology is included in section 3.0.

Based on the data set, EPA has identified that adequate capacity exists for both deepwell- and surface-disposed U005, U022, U120, U157, and U165 wastes requiring alternative treatment. Therefore, EPA is not granting a national capacity variance for these wastes.

Also based on analysis of the data set, EPA has identified that no volumes of U016 (Benz(c)acridine), U018 (Benz(a)anthracene), U050 (Chrysene) U063 (Dibenzo(a,h)- anthracene), U064 (Dibenzopyrene), U094 (7,12-Dimethylbenz(a)anthracene), and U137 (Ideno(1,2,3,-cd)pyrene) will require alternative treatment and therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-134 Capacity Analysis for U005 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	89	0
Overall Total:	89	0

Table 3-135 Capacity Analysis for U022 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	1,574	0
Subtotals for BDAT:	1,574	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Vitrification	461	0
Subtotals for non-BDAT:	461	0
Overall Total:	2,035	0

Table 3-136 Capacity Analysis for U120 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	158	0
Subtotals for BDAT:	158	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Vitrification	26	0
Subtotals for non-BDAT:	26	0
Overall Total:	184	0

Table 3-137 Capacity Analysis for U157 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	100,000
Overall Total:	0	100,000

Table 3-138 Capacity Analysis for U165 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	85	540
Combustion of Sludges	8,330	0
Combustion of Solids	29,880	0
Overall Total:	38,295	540

3.4.8 Phenolics P020, P034, P047, P048, U052, U101, U170, U188, and U201

RCRA hazardous wastes P020 (2-sec-butyl-4,6-dinitrophenol), P034 (2-cyclohexyl-4,6-dinitrophenol), P047 (4,6-dinitrocresol and salts), and P048 (2,4-dinitrophenol) are nonhalogenated organic compounds that are listed as hazardous for acute toxicity. RCRA hazardous wastes U052 (cresols), U101 (2,4-dimethyl phenol), U170 (4-nitrophenol), U188 (phenol), and U201 (resorcinol) are also nonhalogenated organic compounds. These wastes are listed as hazardous for toxicity. For P020, P047, P048, U052, U101, U170, and U188, EPA is promulgating treatment standards based on incineration for nonwastewaters, and biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters. EPA is promulgating incineration as the method of treatment for P034 nonwastewaters, and incineration or fuel substitution for U201 nonwastewaters. For both P034 and U201 wastewaters, EPA is promulgating wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment.

As shown in Tables 3-139 through 3-146, most of the surface-disposed P020, P047, P048, U052, U101, U170, U188, and U201 wastes and deepwell-injected P020, P048, U170, and U188 wastes requiring alternative treatment were assigned to one of the BDAT technologies based on the physical form of the waste. The BDAT treatment of these wastes would not normally require stabilization or vitrification of treatment residuals. However, in the data set, several U188 waste streams were described as also containing metal-bearing wastes including arsenic. For the mixed U188 and metal-bearing wastes that did not contain arsenic, EPA believes that stabilization of treatment residuals such as incinerator ash, scrubber water, treatment sludges, and wastewater treatment sludges will be required to meet all of the applicable treatment standards. For the mixed U188 and metal-bearing wastes that contain arsenic, EPA believes that vitrification of treatment residuals will be required to meet all of the applicable treatment standards.

During the capacity analysis for the proposed Third Third rule, EPA identified several large volumes of P and U coded wastes reported as deepwell-injected in the TSDR Survey. EPA contacted the firms reporting these large streams to further characterize the generation and current management of these large volumes. Specifically, EPA wanted to determine if these large streams were actually generated as small volumes of hazardous wastes and subsequently mixed with large volumes of other wastes.

A 2 million gallon per year stream containing P020 was reported in the TSDR Survey as deepwell-injected; as were a 60 million gallon per year stream and a 5 million gallon per year stream containing U188. Follow-up conversations with the facilities reporting these waste streams indicated that they were mixtures containing small unknown fractions of P020 and U188. Based on this information, EPA assumed that 100,000 gallons per year was a reasonable estimate of the volume of P020 and U188 generated prior to mixing with other wastes in each of these streams. Because the land disposal restrictions apply to wastes at the point of generation, EPA used the 100,000 gallon per year estimate as the required alternative treatment capacity for the P020 contained in the mixed waste stream containing P020. Because two mixed streams contained U188, EPA estimated the required alternative treatment capacity for U188 to be 200,000 gallons per year. A discussion on this methodology is included in section 3.0.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed P020, P047, P048, U052, U101, U170, U188, and U201 wastes and deepwell-injected P020, P048, U170, and U188 wastes requiring alternative treatment. Therefore, EPA is not granting a national capacity variance for these wastes.

Also based on analysis of the data set, EPA has identified that no volume of P034 (2-cyclohexylphenol-4,6-dinitrophenol) will require alternative treatment for this rulemaking and therefore, EPA is not granting a national capacity variance for this waste.

Table 3-139 Capacity Analysis for P020 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Biological Treatment	0	100,000
Combustion of Liquids	317	0
Combustion of Solids	20,100	0
Total:	20,417	100,000

Table 3-140 Capacity Analysis for P047 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assign[illegible]TS or Equivalents:		
Incineration of Solids	5,265	0
Overall Total:	5,265	0

Table 3-141 Capacity Analysis for P048 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Biological Treatment	0	110,040
Combustion of Sludges	2,549	0
Combustion of Solids	1,415	0
Overall Total:	3,964	110,040

Table 3-142 Capacity Analysis for U052 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	93,141	0
Combustion of Solids	1,090	0
Overall Total:	94,231	0

Table 3-143 Capacity Analysis for U101 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	9,280	0
Overall Total:	9,280	0

Table 3-144 Capacity Analysis for U170 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Biological Treatment	0	342,000
Combustion of Liquids	26,640	0
Combustion of Solids	297	0
Overall Total:	26,937	342,000

Table 3-145 Capacity Analysis for U188 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Biological Treatment	0	200,000
Combustion of Liquids	3,885	0
Combustion of Sludges	6,553	0
Combustion of Solids	234,340	0
Subtotals for BDAT:	244,778	200,000
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	2,517	0
Stabilization of Scrubber Water Treatment Sludge	126	0
Vitrification	6	0
Subtotals for non-BDAT:	2,649	0
Overall Total:	247,427	200,000

Table 3-146 Capacity Analysis for U201 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	23	0
Combustion of Solids	144	0
Overall Total:	167	0

3.4.9 Oxygenated Hydrocarbons and Heterocyclics

P001, P003, P005, P088, P102, U001, U002, U004, U008, U031, U053, U057, U085, U108, U112, U113, U117, U118, U122, U123, U124, U125, U126, U140, U147, U154, U159, U161, U162, U166, U182, U197, U213, and U248

These RCRA hazardous wastes are classified as oxygenated hydrocarbons. The constituents for which these wastes are listed as hazardous are as follows:

RCRA Code	Constituent
P001	Warfarin (>3%)
P003	Acrolein
P005	Allyl alcohol
P088	Endothall
P102	Propargyl alcohol
U001	Acetaldehyde
U002	Acetone
U004	Acetophenone
U008	Acrylic acid
U031	n-Butanol
U053	Crotonaldehyde
U057	Cyclohexanone
U085	2,2-Bioxirane
U108	1,4-Dioxane
U112	Ethyl acetate
U113	Ethyl acrylate
U117	Ethyl ether
U118	Ethyl methacrylate
U122	Formaldehyde
U123	Formic acid
U124	Furan
U125	Furfanal
U126	Glycidylaldehyde
U140	Isobutyl alcohol
U147	Maleic anhydride
U154	Methanol
U159	Methyl ethyl ketone
U161	Methyl isobutyl ketone
U162	Methyl methacrylate
U166	1,4-Napththoquinone
U182	Paraldehyde
U197	p-Benzoquinone
U213	Tetrahydrofuran
U248	Warfarin (<3%)

The P wastes are listed as hazardous for acute toxicity. The U wastes are listed as hazardous for toxicity. EPA has identified the BDAT technologies for U002, U004, U031, U108, U112, U117, U118, U140, U159, U161, and U162 to be treatment standards based on the performance of biological treatment, or wet-air oxidation followed by carbon adsorption for nonwastewaters, and incineration for wastewaters. For P001, P003, P005, P088, P102, U001, U008, U053, U085, U113, U122, U123, U124, U125, U126, U147, U154, U166, U182, U197, U213, and U248, EPA has identified incineration or fuel substitution as methods of treatment for nonwastewaters and wet-air oxidation or chemical oxidation, followed by carbon adsorption, or incineration as methods of treatment for wastewaters. For U057, EPA is promulgating concentration standards based on biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration as the method of treatment for nonwastewaters.

As shown in Tables 3-147 through 3-176, most of these wastes identified from the data set as requiring alternative treatment have been assigned to one of the BDAT technologies based on the physical form of the waste and whether the waste was a wastewater or nonwastewater. The BDAT treatment of these wastes does not normally require stabilization of treatment residuals. However, a small volume of U004 and U122 nonwastewaters mixed with metal-bearing wastes was reported in the data set. For these wastes, EPA believes that stabilization of incinerator ash and scrubber water treatment sludge will be required after incineration in order to meet all the applicable treatment standards. Also, one U008 nonwastewater mixed with mercury-bearing waste was reported in the data set. For this waste stream, EPA believes that mercury retorting of treatment residuals will be required after incineration to meet all of the applicable treatment standards. Volumes of U159 wastes were assigned to carbon adsorption followed by chemical precipitation, stabilization of wastewater treatment sludge, and vitrification as part of a mixture requiring these technologies. EPA believes that these treatments will be required to meet all applicable treatment standards.

During the capacity analysis for the proposed Third Third rule, EPA identified several large volumes of P and U coded wastes reported as deepwell-injected in the TSDR Survey. EPA contacted the firms reporting these large streams to further characterize the generation and current management of these large volumes. Specifically, EPA wanted to determine if these large streams were actually generated as small volumes of hazardous wastes and subsequently mixed with large volumes of other wastes.

A 60 million gallons per year stream containing U002 was reported in the TSDR Survey as deepwell-injected; as were a 189 million gallon per year stream containing U008, a 2 million gallon per year stream containing U031, a 1 million gallon per year stream containing U122, a 243 million gallon per year stream containing U162, and a 124 million gallon per year stream containing U197. Follow-up conversations with the facilities reporting each of these waste streams indicated that they were mixtures containing small unknown fractions of U002, U008, U031, U122, U162, and U197 respectively. Based on this information, EPA assumed that 100,000 gallons per year was a reasonable estimate of the volume of U002, U008, U031, U122, U162, and U197 generated prior to mixing with other wastes. Because the land disposal restrictions apply to wastes at the point of generation, EPA used the 100,000 gallon per year estimate as the required alternative treatment capacity for these deepwell-injected wastes. A discussion on this methodology is included in section 3.0.

The data set also included a deepwell-injected volume of U213. However, because this waste stream will be treated on-site, its volume is not included in required capacity for combustion.

Based on the data set, EPA has identified that adequate treatment capacity exists for these surface-disposed and deepwell-injected P and U wastes requiring alternative treatment. Furthermore, analysis of the data set indicates that no volumes of U053, U085, U124, and U166 will require alternative treatment for this rulemaking. Therefore, EPA is not granting a national capacity variance for any of these wastes.

Table 3-147 Capacity Analysis for P001 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	16	0
Overall Total:	16	0

Table 3-148 Capacity Analysis for P003 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Biological Treatment	240	0
Combustion of Liquids	240	0
Overall Total:	480	0

Table 3-149 Capacity Analysis for P005 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	27,000
Combustion of Solids	1,476	0
Overall Total:	1,476	27,000

Table 3-150 Capacity Analysis for P088 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Sludges	240	0
Combustion of Solids	821	0
Overall Total:	1,061	0

Table 3-151 Capacity Analysis for P102 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	84,240
Overall Total:	0	84,240

Table 3-152 Capacity Analysis for U001 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	534,480
Combustion of Solids	31	0
Overall Total:	31	534,480

Table 3-153 Capacity Analysis for U002 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Biological Treatment	0	100,000
Combustion of Liquids	644	0
Combustion of Solids	2,253	0
Overall Total:	2,897	100,000

Table 3-154 Capacity Analysis for U004 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Sludges	139	0
Subtotals for BDAT:	139	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	14	0
Stabilization of Scrubber Water Treatment Sludge	1	0
Subtotals for non-BDAT:	15	0
Overall Total:	154	0

Table 3-155 Capacity Analysis for U008 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	100	0
Combustion of Solids	1,586	0
Incineration of Liquids	0	100,000
Subtotals for BDAT:	1,686	100,000
Quantities Included in Mixtures and Assigned to Additional Technology:		
Mercury Retorting	2	0
Stabilization of Retort Slag	9	0
Subtotals for non-BDAT:	11	0
Overall Total:	1,697	100,000

Table 3-156 Capacity Analysis for U031 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Biological Treatment	0	100,000
Combustion of Liquids	134	0
Combustion of Solids	11,594	0
Overall Total:	11,728	100,000

Table 3-157 Capacity Analysis for U057 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Biological Treatment	160	0
Combustion of Liquids	160	0
Combustion of Solids	16	0
Overall Total:	336	0

Table 3-158 Capacity Analysis for U108 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	4,805	0
Overall Total:	4,805	0

Table 3-159 Capacity Analysis for U112 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Biological Treatment	0	76
Combustion of Liquids	273	178
Combustion of Solids	1,794	0
Overall Total:	2,067	254

Table 3-160 Capacity Analysis for U113 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	4,500
Overall Total:	0	4,500

Table 3-161 Capacity Analysis for U117 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	30	0
Overall Total:	30	0

Table 3-162 Capacity Analysis for U118 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	240
Combustion of Solids	827	0
Overall Total:	827	240

Table 3-163 Capacity Analysis for U122 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	7,968	100,000
Combustion of Sludges	29	0
Combustion of Solids	39,590	0
Incineration of Liquids	1,494	0
Subtotals for BDAT:	49,081	100,000
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	0	2
Stabilization of Scrubber Water Treatment Sludge	0	2
Subtotals for non-BDAT:	0	4
Overall Total:	49,081	100,004

Table 3-164 Capacity Analysis for U123 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	1,533	0
Combustion of Solids	1,422	0
Incineration of Liquids	286	0
Overall Total:	3,241	0

Table 3-165 Capacity Analysis for U125 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	251	0
Overall Total:	251	0

Table 3-166 Capacity Analysis for U126 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	26,549	0
Overall Total:	26,549	0

Table 3-167 Capacity Analysis for U140 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Biological Treatment	0	1,000,000
Combustion of Liquids	40	0
Combustion of Solids	30	0
Overall Total:	70	1,000,000

Table . Capacity Analysis for U147 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	14,550	0
Incineration of Liquids	0	480
Overall Total:	14,550	480

Table 3-169 Capacity Analysis for U154 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	30,183	1,738
Combustion of Solids	2,755	0
Incineration of Liquids	0	339,600
Overall Total:	32,938	341,338

Table 3-170 Capacity Analysis for U159 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Biological Treatment	204	0
Combustion of Liquids	1,832	3,780
Combustion of Sludges	36	0
Combustion of Solids	31,651	0
Subtotals for BDAT:	33,723	3,780
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Wastewater Treatment Sludge	2	0
Vitrification	2	0
Subtotals for non-BDAT:	4	0
all Total:	33,727	3,780

Table 3-171 Capacity Analysis for U161 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	1,581	0
Overall Total:	1,581	0

Table 3-172 Capacity Analysis for U162 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	4,320	100,000
Combustion of Solids	1,034	0
Overall Total:	5,354	100,000

Table 3-173 Capacity Analysis for U182 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	1,520	0
Overall Total:	1,520	0

Table 3-174 Capacity Analysis for U197 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	100,000
Overall Total:	0	100,000

Table 3-175 Capacity Analysis for U213 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	240	0
Overall Total:	240	0

Table 3-176 Capacity Analysis for [illegible] (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	13,525	0
Overall Total:	13,525	0

3.4.10 Organo-Nitrogen Compounds

EPA has grouped eleven P wastes and thirty-seven U wastes together into a single general treatability category, identified as organo-nitrogen compounds. These P and U wastes represent a wide range of chemicals produced in a variety of individual processes. EPA's reasons for grouping these organic chemicals together are that they all contain nitrogen and do not contain chlorine or any other halogen. To facilitate transferring appropriate treatability data, EPA further divided this category into six subgroups based on structure, giving functional group similarities particular priority. These subgroups are: 1) Nitrogen Heterocyclics; 2) Amines and Amides; 3) Nitrogen-Bearing Diphenyls; 4) Nitriles; 5) Nitro Compounds; and 6) Nitroso Compounds.

3.4.10 (1) Nitrogen Heterocyclic Compounds P008, P018, P054, P067, U011, U148, U179, U180, U191, and U196

P008, P018, P054, and P067

RCRA hazardous wastes P008 (4-aminopyridine), P018 (bruane), P054 (aziridine), and P067 (2-methylaziridine) are nitrogen heterocyclic compounds listed as hazardous for acute toxicity. EPA has identified the BDAT technologies for these wastes to be wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration for wastewaters, and incineration for nonwastewaters. EPA is promulgating these technologies as methods of treatment rather than developing concentration-based standards. EPA believes that the nonwastewater forms of these wastes will not be amenable to fuel substitution.

As shown in Tables 3-177 and 3-178, only surface-disposed P018 and P067 wastes were identified as requiring alternative treatment. These wastes were assigned to one of the BDAT technologies based on the physical form of the waste and whether it was described as a wastewater or nonwastewater.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed P018 and P067 wastes requiring alternative treatment. Furthermore, analysis of the data set indicates that no volumes of P008 and P054 will require alternative treatment for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

U011, U148, U179, U180, U191, and U196

RCRA hazardous wastes U011 (amitrole), U148 (maleic anhydride), U179 (n-nitrosopiperidine), U180 (n-nitrosopyrolidine), U191 (2-picoline), and U196 (pyridine) are nitrogen heterocyclic compounds listed as hazardous for toxicity. EPA has identified the BDAT technologies for U011, U148, and U191 wastes to be wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration for wastewaters, and incineration for nonwastewaters. EPA is promulgating these technologies as methods of treatment rather than developing concentration-based standards. EPA is promulgating concentration standards for U179, U180, and U196 based on biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration for nonwastewaters.

As shown in Tables 3-179 through 3-181, only surface-disposed nonwastewater U148, U180, and U196 wastes were identified as requiring alternative treatment. These wastes were assigned to a BDAT technology for nonwastewaters based on the physical form of the waste.

Based on analysis of the data set, EPA has identified that adequate alternative treatment capacity exists for the surface-disposed U148, U180, and U196 wastes requiring alternative treatment. Analysis of the data set indicates that no volumes of U011, U179, and U191 will require alternative treatment for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-177 Capacity Analysis for P018 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	955	0
Overall Total:	955	0

Table 3-178 Capacity Analysis for P067 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	66	0
Overall Total:	66	0

Table 3-179 Capacity Analysis for U148 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	44	0
Overall Total:	44	0

Table 3-180 Capacity Analysis for U180 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	240	0
Overall Total:	240	0

Table 3-181 Capacity Analysis for U196 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	480	0
Combustion of Solids	1,335	0
Overall Total:	1,815	0

3.4.10 (2) Amine and Amide Compounds P046, P064, U007, U012, U092, U110, U167, U168, U194, and U238

U007, U012, U167, and U168

RCRA hazardous wastes U007 (acrylomide), U012 (analine), U167 (1-naphthylamine), and U168 (2-naphthylamine) are amine and amide compounds listed as hazardous for toxicity. EPA has identified the BDAT technologies for U007 and U167 wastes to be wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration for wastewaters, and incineration for nonwastewaters. EPA is promulgating these technologies as methods of treatment rather than developing concentration-based standards. For U012 and U168 wastewaters, EPA is promulgating concentration-based standards based on biological treatment, or wet-air oxidation followed by carbon adsorption. For U012 nonwastewaters, EPA is promulgating concentration standards based on incineration. For U168 nonwastewaters, EPA is promulgating incineration as the method of treatment.

As shown in Tables 3-183, 3-184, and 3-186, only surface-disposed U007, U012, and U167 nonwastewaters, and deepwell-injected U007 and U012 nonwastewaters, were identified as requiring alternative treatment. These wastes were assigned to a BDAT technology for nonwastewaters based on the physical form of the waste. The nonwastewater BDAT treatment of these wastes does not normally require treatment of residuals. A mixed U007 and mercury-bearing waste stream was reported in the data set. EPA believes that mercury retorting of treatment residuals will be required after the U007 BDAT treatment to meet all the applicable treatment standards.

During the capacity analysis for the proposed Third Third rule, EPA identified several large volumes of P and U coded wastes reported as deepwell-injected in the TSDR Survey. EPA contacted the firms reporting these large streams to further characterize the generation and current management of these large volumes. Specifically, EPA wanted to determine if these large streams were actually generated as small volumes of hazardous wastes and subsequently mixed with large volumes of other wastes.

A deepwell injected volume of 28 million gallons per year containing U012 and a deepwell injected volume of 189 million gallons per year containing U007 were reported in the TSDR Survey. Follow-up conversations with the facilities reporting these waste streams indicated that they were mixtures containing small unknown fractions of U012 and U007 respectively. Based on this information, EPA estimated that 100,000 gallons per year was a reasonable estimate of the volume of U012 and U007 generated prior to mixing with other wastes. Because the land disposal restrictions apply to wastes at the point of generation, EPA used the 100,000 gallon per year estimate as the required alternative treatment capacity for the U012 and U007 contained in these mixed waste streams. A discussion on this methodology is included in section 3.0.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed U007, U012, and U167 wastes and deepwell-injected U007 and U012 wastes requiring alternative treatment. Analysis of the data set indicates that no volumes of U168 will require alternative treatment for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

P046, P064, U092, U110, U194, and U238

RCRA hazardous wastes P046 (alpha, alpha-Dimethylphenethylamine), P064 (isocyanic acid, ethyl ester), U092 (dimethylamine), U110 (dipropylamine), U194 (n-propylamine), and U238 (ethyl carbamate) are amine and amide compounds. P064 is listed as hazardous for acute toxicity. U092, U194, and U238 are listed as hazardous for toxicity. EPA has identified the BDAT technologies for P046, P064, U092, U110, U194, and U238 to be wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration for wastewaters, and incineration for nonwastewaters. EPA is promulgating these technologies as methods of treatment rather than developing concentration-based standards.

As shown in Tables 3-182, 3-185, 3-187, and 3-188, only surface-disposed P064, U092, and U238 nonwastewaters and deepwell-injected U194 nonwastewaters were identified as requiring alternative treatment. These wastes were assigned to a nonwastewater BDAT technology based on the physical form of the waste. The nonwastewater BDAT treatment of these wastes does not normally require stabilization of treatment residuals. However, several mixed P064 and metal-bearing waste streams were reported in the data set. EPA has identified that stabilization of incinerator ash and scrubber water treatment sludge will be required after the BDAT treatment to meet all the applicable treatment standards for these waste streams.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed P064, U092, and U238 wastes and deepwell-injected U194 wastes requiring alternative treatment. No deepwell-injected P064, U092, and U238 wastes or surface-disposed U194 wastes were reported and therefore, will not require alternative treatment for this rulemaking. Furthermore, analysis of the data set indicates that no volumes of P046 and U110 will require alternative treatment for this rulemaking. Therefore, EPA is not granting a national capacity variance for any of these wastes.

Table 3-182 Capacity Analysis for P064 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	36	0
Incineration of Solids	1,010	0
Subtotals for BDAT:	1,046	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	1,212	0
Stabilization of Scrubber Water Treatment Sludge	60	0
Subtotals for non-BDAT:	1,272	0
Overall Total:	2,318	0

Table 3-183 Capacity Analysis [illegible]007 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	100,000
Incineration of Sludges	516	0
Incineration of Solids	23,404	0
Subtotals for BDAT:	23,920	100,000
Quantities Included in Mixtures and Assigned to Additional Technology:		
Mercury Retorting	1	0
Stabilization of Retort Slag	9	0
Subtotals for non-BDAT:	10	0
Overall Total:	23,930	100,000

Table 3-184 Capacity Analysis for U012 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	1,640	100,000
Combustion of Sludges	303	0
Combustion of Solids	8,370	0
Overall Total:	10,313	100,000

Table 3-185 Capacity Analysis for U092 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	240	0
Overall Total:	240	0

Table 3-186 Capacity Analysis for U167 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	404	0
Overall Total:	404	0

Table 3-187 Capacity Analysis for U194 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	9,120
Overall Total:	0	9,120

Table 3-188 Capacity Analysis for U238 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	205	0
Overall Total:	205	0

3.4.10 (3) Aminated Diphenyls and Biphenyls UC14, U021, U091, U093, U095, and U236

RCRA hazardous wastes U014 (auramine), U021 (benzidine), U091 (3,3-dimethoxybenzidine), U093 (p-dimethylaminoazobenzidine), U095 (3,3-dimethylbenzidine), and U236 (trypan blue) are biphenyl compounds listed as hazardous for toxicity. EPA has identified the BDAT technologies for U014, U021, U091, U093, U095, and U236 to be wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration for wastewaters, and incineration for nonwastewaters. EPA is promulgating these technologies as methods of treatment rather than developing concentration-based treatment standards. EPA believes that these wastes are not amenable to fuel substitution.

As shown in Tables 3-189 through 3-191, only a small volume of surface-disposed U014, U021, and U093 wastes were identified as requiring alternative treatment. These wastes were assigned to a nonwastewater BDAT technology based on their physical form.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed U014, U021, and U093 wastes requiring alternative treatment. No deepwell-injected volumes of U014, U021, and U093 wastes were reported and therefore, will not require alternative treatment capacity for this rulemaking. Furthermore, analysis of the data set indicates that no volumes of U091, U095, and U236 will require alternative treatment for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-189 Capacity Analysis for U014 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	24	0
Overall Total:	24	0

Table . 90 Capacity Analysis for U021 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	4,199	0
Overall Total:	4,199	0

Table 3-191 Capacity Analysis for U093 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	60	0
Overall Total:	60	0

3.4.10 (4) Nitriles P069, P101, U003, U009, U149, and U152

P101, U003, U009, and U152

RCRA hazardous wastes P101 (propanenitrile), U003 (acetonitrile), U009 (acrylonitrile), and U152 (methacrylonitrile) are straight chain aliphatic nitriles. P101 is listed as hazardous for acute toxicity, while U003, U009, and U152 are listed as hazardous for toxicity. For P101, U009, and U152, EPA is promulgating concentration standards based on biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration for nonwastewaters. For U003, EPA is promulgating concentration standards based on biological treatment, or wet-air oxidation followed by carbon adsoprtion for wastewaters, and incineration as the method of treatment for nonwastewaters.

As shown in Tables 3-193 and 3-194, only surface-disposed U003 and U009 nonwastewasters, and deepwell-injected U009 wastewaters, were identified as requiring alternative treatment. These surface-disposed and deepwell-injected wastes were assigned to a BDAT treatment based on the physical form of the waste and whether it was a wastewater or nonwastewater.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed U003 and U009, and deepwell-injected U009 wastes requiring alternative treatment. Furthermore, analysis of the data set indicates that no volumes of P101 and U152 will require alternative treatment for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

P069 and U149

RCRA hazardous wastes P069 (methyllactronitrile) and U149 (malononitrile) are straight chain aliphatic nitriles. P069 is listed as hazardous for acute toxicity and U149 is listed as hazardous for toxicity. EPA has identified the BDAT technologies for these wastes to be wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration for wastewaters, and incineration for nonwastewaters. EPA is promulgating these technologies as methods of treatment rather than developing concentration-based standards. EPA believes that the nonwastewater forms of these wastes are not amenable to fuel substitution.

As shown in Tables 3-192 and 3-195, both surface-disposed and deepwell-injected P069 nonwastewaters, and surface-disposed U149 nonwastewaters, were identified as requiring alternative treatment. These wastes were assigned to a BDAT technology based on their physical form. During the capacity analysis for the proposed Third Third rule, EPA identified several large volumes of P and U coded wastes reported as deepwell-injected in the TSDR Survey. EPA contacted the firms reporting these large streams to further characterize the generation and current management of these large volumes. Specifically, EPA wanted to determine if these large streams were actually generated as small volumes of hazardous wastes and subsequently mixed with large volumes of other wastes.

A deepwell injected volume of 189 million gallons per year containing P069 was reported in the TSDR Survey. Follow-up conversations with the facility reporting this waste stream indicated that the stream was a mixture containing a small unknown fraction of P069. Based on this information, EPA assumed that 100,000 gallons per year was a reasonable estimate of the volume of P069 generated prior to mixing with other wastes. Because the land disposal restrictions apply to wastes at the point of generation, EPA used the 100,000 gallon per year estimate as the required alternative treatment capacity for the P069 contained in this mixed waste stream. A discussion on this methodology is included in section 3.0.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed P069 and U149 wastes and deepwell-injected P069 wastes requiring alternative treatment. No deepwell-injected U149 wastes were reported, and therefore will not require alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-192 Capacity Analysis for P069 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	240	100,000
Overall Total:	240	100,000

Table 3-193 Capacity Analysis for U003 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	109	0
Overall Total:	109	0

Table 3-194 Capacity Analysis for U009 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Biological Treatment	0	23,760
Combustion of Liquids	45,840	0
Combustion of Solids	2,907	0
Overall Total:	48,747	23,760

Table 3-195 Capacity Analysis for U149 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	33,600	0
Overall Total:	33,600	0

3.4.10 (5) Nitro Compounds P077, U105, U106, U169, U171, U181, and U234

RCRA hazardous wastes P077 (p-nitroanaline), U105 (2,4-dinitrotoluene), U106 (2,6-dinitrotoluene), U169 (nitrobenzene), U171 (2-nitropropane), U181 (5-nitro-o-toluidine), and U234 (sym-trinitrobenzene) are classified as nitro compounds. P077 is listed as hazardous for acute toxicity. The "U" waste codes are listed as hazardous for toxicity. EPA is proposing concentration standards for P077, U105, U106, U169, and U181 wastes based on biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration for nonwastewaters. For U171 and U234, EPA has identified the BDAT technologies to be wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration for wastewaters, and incineration for nonwastewaters. EPA is promulgating these technologies as methods of treatment rather than developing concentration-based standards.

As shown in Tables 3-196 through 3-201, only surface-disposed P077, U105, U106, U169, U181, and U234 nonwastewaters, and deepwell-injected U105, U106, and U169 nonwastewaters, were identified as requiring alternative treatment. These wastes were assigned a BDAT technology for nonwastewaters based on the physical form of the waste. The BDAT treatment of these wastes does not normally require treatment of residuals. A mixed U169 and arsenic-bearing waste stream was also reported in the data set. EPA believes that vitrification of the incinerator ash and scrubber water treatment sludge will be required after the U169 BDAT treatment to meet all of the applicable treatment standards.

During the capacity analysis for the proposed Third Third rule, EPA identified several large volumes of P and U coded wastes reported as deepwell-injected in the TSDR Survey. EPA contacted the firms reporting these large streams to further characterize the generation and current management of these large volumes. Specifically, EPA wanted to determine if these large streams were actually generated as small volumes of hazardous wastes and subsequently mixed with large volumes of other wastes.

A deepwell injected volume of 27 million gallons per year containing U105, U106, and U169 was reported in the TSDR Survey. Follow-up conversations with the facility reporting this waste stream indicated that the stream was a mixture containing small unknown fractions of U105, U106, and U169. Based on this information, EPA assumed that 100,000 gallons per year was a reasonable estimate of the volume of U105, U106, and U169 generated prior to mixing with other wastes. Because the land disposal restrictions apply to wastes at the point of generation, EPA used the 100,000 gallon per year estimate as the required alternative treatment capacity for the U105, U106, and U169 contained in this mixed waste stream. A discussion on this methodology is included in section 3.0.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed P077, U105, U106, U169, U181, and U234 wastes requiring alternative treatment. Adequate alternative treatment capacity has also been identified for deepwell-injected U105, U106, and U169 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

Analysis of the data set revealed no surface disposed or deepwell-injected volumes of U171 or deepwell-injected U181 requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-196 Capacity Analysis for P077 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Sludges	4,560	0
Combustion of Solids	24	0
Overall Total:	4,584	0

Table 3-197 Capacity Analysis for U105 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	100,000
Combustion of Sludges	2,160	0
Overall Total:	2,160	100,000

Table 3-198 Capacity Analysis for U106 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	0	100,000
Combustion of Solids	60	0
Overall Total:	60	100,000

Table 3-199 Capacity Analysis for U169 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Liquids	1,054	100,000
Combustion of Solids	527	0
Subtotals for BDAT:	1,581	100,000
Quantities Included in Mixtures and Assigned to Additional Technology:		
Vitrification	4	0
Subtotals for non-BDAT:	4	0
Overall Total:	1,585	100,000

Table 3-200 Capacity Analysis for U18: (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Combustion of Solids	314	0
Subtotals for BDAT:	314	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Stabilization of Incinerator Ash	63	0
Stabilization of Scrubber Water Treatment Sludge	3	0
Subtotals for non-BDAT:	66	0
Overall Total:	380	0

Table 3-[illegible]1 Capacity Analysis for U234 (Excluding S[illegible] and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	41	0
Overall Total:	41	0

3.4.10 (6) Nitroso Compounds P082, P084, U111, U172, U173, U174, U176, U177, and U178

RCRA hazardous wastes P082 (n-nitrosodimethylamine), P084 (n-nitrosomethylvinylamine), U111 (di-n-propylnitrosoamine), U172 (n-nitroso-di-n-butylamine), U173 (n-nitroso-di-n-ethanolamine), U174 (n-nitrosodiethylamine), U176 (n-nitroso-n-ethylurea), U177 (n-nitroso-n-methylurea), and U178 (n-nitroso-n-methylurethane) are classified as nitroso compounds. P082 and P084 are listed as hazardous for acute toxicity, while the "U" wastes codes are listed as hazardous for toxicity. EPA is promulgating concentration standards for U111, U172, and U174 wastes based on biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration for nonwastewaters. For P084, U173, U176, U177, and U178 wastes, EPA has identified the BDAT technologies to be wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration for wastewaters, and incineration for nonwastewaters. EPA is promulgating these technologies as methods of treatment rather than developing concentration-based standards. For P082, EPA is promulgating concentration standards based on biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration as the method of treatment for nonwastewaters. EPA believes that nonwastewater forms of these wastes will not be amenable to fuel substitution.

As shown in Table 3-202, only a small volume of surface-disposed U177 nonwastewaters was identified as requiring alternative treatment. This waste was assigned to a BDAT for nonwastewaters based on the physical form.

Based on the data set, EPA has identified that adequate treatment capacity exists for the surface-disposed U177 waste requiring alternative treatment. Furthermore, based on an analysis of the data set, EPA has identified that no volumes of P082, P084, U111, U172, U173, U174, U176, and U178 will require alternative treatment for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-202 Capacity Analysis for U177 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	1,520	0
Overall Total:	1,520	0

3.4.11 Organo-Sulfur Compounds

P002, P014, P022, P045, P049, P066, P070, P072, P093, P116, U114, U116, U119, U153, U193, U218, U219, and U244

The constituents for which these BDAT hazardous wastes have been listed are organo-sulfur compounds. The constituents for each of these waste codes are as follows:

RCRA Code	Constituent
P002	1-acetyl-2-thiourea
P014	Benzenethiol
P022	Carbon disulfide
P045	Thiofanox
P049	2,4-Dithiobiuret
P066	Methomyl
P070	Aldicarb
P072	Alpha-Naphthylthiourea (ANTU)
P093	N-Phenylthiourea
P116	Thiosemicarbazide
U114	Ethylenebis (dithiocarbamic acid, salts and esters)
U116	Ethylene thiourea
U119	Ethyl methanesulfonate
U153	Methanethiol
U193	1,3-Propane sultone
U218	Thioacetamide
U219	Thiourea
U244	Thiram

The P wastes are listed as hazardous for acute toxicity. The U wastes are listed as hazardous for toxicity. For all of these organo-sulfur wastes except P022, EPA is promulgating incineration as the method of treatment for nonwastewaters, and wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment for wastewaters. For P022, EPA is promulgating concentration standards based on biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters, and incineration as the method of treatment for nonwastewaters.

As shown in Tables 3-203 through 3-214, only surface-disposed nonwastewater forms of P002, P014, P022, P066, P070, P093, U114, U116, U119, U218, U219, and U244 wastes and deepwell-injected nonwastewater forms of U219 and U244 wastes were identified as requiring alternative treatment. These wastes were assigned to a BDAT technology for nonwastewaters based on the physical form of the waste. EPA has identified that sufficient capacity exists for surface-disposed P002, P014, P022, P066, P070, P093, U114, U116, U119, U218, U219, and U224 wastes and deepwell-injected U219 and U244 wastes requiring alternative treatment capacity. Consequently, EPA is not granting a two-year national capacity variance for these wastes listed above.

Further analysis of the data set revealed no deepwell-injected or surface-disposed volumes of P045, P049, P072, P116, U153, and U193 wastes requiring alternative treatment capacity for this rulemaking. In addition, no deepwell-injected volumes of P002, P014, P022, P066, P070, P093, U114, U116, U119, and U218 wastes were reported. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-203 Capacity Analysis for P002 (Excluc [illegible] and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	100	0
Overall Total:	100	0

Table 3-204 Capacity Analysis for P014 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	17,572	0
Overall Total:	17,572	0

Table 3-205 Capacity Analysis for P022 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Sludges	6,720	0
Incineration of Solids	6,380	0
Overall Total:	13,100	0

Table 3-206 Capacity Analysis for P066 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	11,902	0
Overall Total:	11,902	0

Table 3-207 Capacity Analysis for P070 (Excluding S[illegible] Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	98	0
Overall Total:	98	0

Table Capacity Analysis for P093 (Excluding S and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	42	0
Overall Total:	42	0

Table 3-209 Capacity Analysis for U114 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	4,134	0
Overall Total:	4,134	0

Table 3-210 Capacity Analysis for U116 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	254	0
Overall Total:	254	0

Table 3-211 Capacity Analysis for U119 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	49	0
Overall Total:	49	0

Table 3-212 Capacity Analysis for U218 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	60	0
Overall Total:	60	0

Table 3-213 Capacity Analysis for U219 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	76	240
Incineration of Solids	1,817	0
Overall Total:	1,893	240

Table 3-214 Capacity Analysis for U244 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	13,920
Incineration of Sludges	140	0
Incineration of Solids	86	0
Overall Total:	226	13,920

3.4.12 Pharmaceuticals

P007, P042, P075, P108, U010, U015, U035, U059, U089, U090, U141, U143, U150, U155, U163, U164, U187, U200, U202, U203, U206, and U237

RCRA hazardous wastes P007 (muscimol (5-(aminoethyl)-3-isoxazolol), P042 (epinephrine), P075 (nicotine and salts), P108 (strychnine and salts), U010 (mitomycin C), U015 (azaserine), U035 (chlorambucil), U059 (daunomycin), U089 (diethylstilbestrol), U090 (dihydrosafrole), U141 (isosafrole), U143 (lasiocarpine), U150 (melphalan), U155 (methapyrilene), U163 (n-methyl-n-nitro n-nitrosoguanidine), U164 (methylthiouracil), U187 (phenacetin), U200 (reserpine), U202 (saccharin and salts), U203 (safrole), U206 (streptozotocin), and U237 (uracil mustard) are pharmaceutical wastes. The "P" wastes are listed as hazardous for acute toxicity. The "U" wastes are listed as hazardous for toxicity.

For all of these pharmaceutical wastes except U141, U155, U187, and U203, EPA is proposing to establish incineration as the method of treatment for nonwastewaters and wet-air oxidation followed by carbon adsorption, chemical oxidation followed by carbon adsorption, or incineration as methods of treatment for wastewaters. For U141, U155, U187, and U203, EPA is proposing BDAT concentration standards based on the performance of incineration for nonwastewaters, and biological treatment, or wet-air oxidation followed by carbon adsorption for wastewaters.

As shown in Tables 3-214 through 3-220, only surface-disposed nonwastewater forms of P075, P108, U010, U202, and U237 wastes and deepwell-injected nonwastewaters forms of P075 and U200 wastes were identified as requiring alternative treatment. These wastes were assigned to a BDAT treatment for nonwastewaters based on the physical form of the waste. The BDAT treatment of these wastes does not normally require treatment of residuals. One waste stream reported in the data set was a mixed P108 and arsenic-bearing waste. EPA believes that after the P108 BDAT treatment, vitrification of the incinerator ash and scrubber water treatment sludge will be required to meet all of the applicable treatment standards.

EPA has identified that sufficient alternative treatment capacity exists for P075, P108, U010, U202, and U237 waste volumes being surface-disposed and P075 and U200 waste volumes being deep-well injected. Consequently, EPA is not granting a two-year capacity variance for any of these wastes.

Analysis of the data set revealed no deepwell-injected or surface-disposed volumes of P007, P042, U015, U035, U059, U089, U090, U141, U143, U150, U155, U163, U164, U187, U203, and U206 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-215 Capacity Analysis for P075 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	1,440
Incineration of Sludges	87	0
Overall Total:	87	1,440

Table 3-216 Capacity Analysis for P108 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Sludges	29	0
Incineration of Solids	5,732	0
Subtotals for BDAT:	5,761	0
Quantities Included in Mixtures and Assigned to Additional Technology:		
Vitrification	6	0
Subtotals for non-BDAT:	6	0
Overall Total:	5,767	0

Table 3-217 Capacity Analysis for U010 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	112	0
Overall Total:	112	0

Table 3-218 Capacity Analysis for U200 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	315,600
Overall Total:	0	315,600

Table 3-219 Capacity Analysis for U202 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	60	0
Overall Total:	60	0

Table 3-220 Capacity Analysis for U237 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	463	0
Overall Total:	463	0

3.5 Potentially Reactive P and U Wastes

These wastes are either highly reactive or explosive, or are polymers that also tend to be highly reactive. For the purpose of BDAT determinations, EPA has identified four subcategories: incinerable reactive organics and hydrazine derivatives, incinerable inorganics, fluorine compounds, and recoverable metallic compounds.

3.5.1 Incinerable Reactive Organics and Hydrazine Derivatives P009, P068, P081, P105, P112, U023, U086, U096, U098, U099, U103, U109, U133, and U160

RCRA hazardous wastes P009 (ammonium picrate (R)), P068 (methyl hydrazine), P081 (nitroglycerine (R)), P105 (sodium azide), and P112 (tetranitromethane (R)) are reactive organics listed as hazardous for acute toxicity. RCRA hazardous wastes U023 (benzotrichloride (C,R,T)), U086 (n,n-dimethylhydrazine), U096 (a,a-dimethyl benzyl hydroperoxide (R)), U098 (1,1-dimethylhydrazine), U099 (1,2-dimethylhydrazine), U103 (dimethyl sulfate), U109 (1,2-diphenylhydra- zine), U133 (hydrazine), and U160 (methyl ethyl ketone peroxide) are reactive organics listed as hazardous for toxicity. EPA is promulgating the use of incineration, fuel substitution, chemical oxidation, or chemical reduction as methods of treatment for nonwastewaters, and carbon adsorption, incineration, chemical oxidation, chemical reduction, or biodegradation as methods of treatment for wastewaters, rather than establishing concentration-based standards.

As shown in Tables 3-221 through 3-226, only volumes of P081, P105, U103, U109, and U133 wastes surface-disposed, and U103, U133, and U160 wastes being deep-well injected were identified from the data set as requiring alternative treatment. These wastes were assigned to a BDAT technology based on the physical form of the waste and whether it was a wastewater or nonwastewater. Therefore, EPA is not granting a national capacity variance for these wastes being surface-disposed or deep-well injected.

During the capacity analysis for the proposed Third Third rule, EPA identified several large volumes of P and U coded wastes reported as deepwell-injected in the TSDR Survey. EPA contacted the firms reporting these large streams to further characterize the generation and current management of these large volumes. Specifically, EPA wanted to determine if these large streams were actually generated as small volumes of hazardous wastes and subsequently mixed with large volumes of other wastes.

A deepwell injected volume of 124 million gallons per year containing U133 was reported in the TSDR Survey. Follow-up conversations with the facility reporting this waste stream indicated that the stream was a mixture containing a small unknown fraction of U133. Based on this information, EPA assumed that 100,000 gallons per year was a reasonable estimate of the volume of U133 generated prior to mixing with other wastes. Because the land disposal restrictions apply to wastes at the point of generation, EPA used the 100,000 gallons per year estimate as the required alternative treatment capacity for the U133 contained in this mixed waste stream. A discussion on this methodology is included in section 3.0.

Further analysis of the data set revealed no deepwell-injected or surface-disposed volumes of P009, P068, P112, U023, U086, U096, U098, and U099 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-221 Capacity Analysis for P081 (Excluding Sc and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	480	0
Overall Total:	480	0

Tac.e 3-222 Capacity Analysis for P105 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Oxidation Followed by Chemical Precipitation	480	0
Incineration of Solids	164	0
Overall Total:	644	0

Table 3-223 Capacity Analysis for U103 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	12	1,560
Incineration of Solids	1,910	0
Overall Total:	1,922	1,560

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Table 3-224 Capacity Analysis for U109 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	2,160	0
Overall Total:	2,160	0

Table 3-225 Capacity Analysis for U133 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	1,450	100,000
Incineration of Solids	264	0
Overall Total:	1,714	100,000

Table 3-226 Capacity Analysis for U160 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	12
Overall Total:	0	12

3.5.2 Incinerable Inorganics P006, P096, P122, U135, U189, and U249

RCRA hazardous wastes P006 (aluminum phosphide), P096 (phosphine), P122 (zinc phosphide, >10%), U135 (hydrogen sulfide), U189 (phosphorus sulfide), and U249 (zinc phosphide <10%) are incinerable inorganic wastes. The P wastes are listed as hazardous for acute toxicity. The U wastes are listed as hazardous for toxicity. For incinerable inorganic wastes, EPA is promulgating methods of treatment based on incineration, chemical oxidation, or chemical reduction for wastewaters and nonwastewaters.

As shown in Tables 3-227 through 3-229, only small volumes of P006 and U249 surface-disposed wastes and P122 deepwell-injected wastes were identified from the data set as requiring alternative treatment. EPA has identified sufficient capacity exists for these wastes and is not granting a national capacity variance for them.

Based on the data set, EPA has identified that adequate treatment capacity exists for P122 wastes being deepwell-injected. Because EPA is promulgating a capacity variance for D003 reactive sulfides being deep-well injected, EPA believes adequate treatment capacity is available for the small quantity of P122 wastewaters being deep-well injected. Therefore, EPA is restricting these P122 wastes from underground injection on May 8, 1990.

Further analysis of the data set revealed no deepwell-injected volumes of P006, P096, U135, U189, and U249 or surface-disposed volumes of P096, P122, U135, and U189 requiring alternative treatment capacity in this rulemaking. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-227 Capacity Analysis for P006 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Oxidation Followed by Chemical Precipitation	47,280	0
Overall Total:	47,280	0

Table 3-228 Capacity Analysis for P122 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Oxidation Followed by Chemical Precipitation	0	7,920
Overall Total:	0	7,920

Table 3-229 Capacity Analysis for U249 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	55	0
Overall Total:	55	0

3.5.3 Fluorine Compounds P056 and U134

RCRA hazardous wastes P056 (fluorine) and U134 (hydrofluoric acid) are fluorine compounds. P056 is listed as hazardous for acute toxicity. U134 is listed as hazardous for toxicity. EPA is promulgating concentration standards based on chemical precipitation for P056 and U134 wastewaters. For P056 nonwastewaters, EPA is promulgating adsorption followed by neutralization as the method of treatment. For U134 nonwastewaters, EPA is promulgating neutralization or adsorption followed by neutralization as methods of treatment

As shown in Tables 3-230 and 3-231, the deepwell-injected P056 and deepwell-injected and surface-disposed U134 wastes requiring alternative treatment have been assigned to their BDAT. Although P056 and U134 wastes must undergo the assigned BDAT method of treatment, EPA believes that one mixed U134 waste stream reported in the data set will require additional treatment in order to meet all applicable treatment standards.

Based on the data set, EPA believes that adequate alternative treatment capacity exists for the deepwell-injected and surface-disposed U134 and deepwell-injected P056 wastes. Therefore, EPA is not granting a national capacity variance for these wastes.

Table 3-230 Capacity Analysis for P056 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Precipitation	0	14,040
Overall Total:	0	14,040

Table 3-231 Capacity Analysis for U134 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Chemical Precipitation	964	210,720
Subtotals for BDAT:	964	210,720
Quantities Included in Mixtures and Assigned to Additional Technology:		
Combustion of Solids	24	0
Subtotals for non-BDAT:	24	0
Overall Total:	988	210,720

3.5.4 Recoverable Metallics P015, P073, and P087

RCRA hazardous wastes P015 (beryllium dust), P073 (nickel carbonyl), and P087 (osmium oxide) are recoverable metallic compounds that are listed as hazardous for acute toxicity. Tables 3-232 through 3-234 presents the surface-disposed volumes of these wastes. EPA is promulgating thermal recovery or metals recovery as methods of treatment for P015 wastewaters and nonwastewaters, rather than concentration-based standards. For P073 wastewaters EPA is promulgating concentration standards based on incineration or chemical oxidation; for P073 nonwastewaters, EPA is promulgating concentration standards based on stabilization. For P087 wastewaters and nonwastewaters, EPA is promulgating recovery as the method of treatment. In the proposed rule, EPA proposed to grant a national capacity variance for surface disposed P015 and P073 nonwastewaters. In the final rule, EPA has determined that there is adequate alternative treatment capacity available for P015 and P073 wastes. Therefore, EPA is not granting a national capacity variance for P015, and P073 wastes that are being surface-disposed in today's final rule. EPA has determined that there is not sufficient treatment capacity for P087 wastewaters and nonwastewaters, and is granting these wastes a national capacity variance. No deepwell-injected volumes were reported for any of these wastes. Therefore, EPA is not granting a national capacity variance for deepwell-disposed wastes.

Table 3-232 Capacity Analysis for P015 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Beryllium Recovery	1,778	0
Overall Total:	1,778	0

Table 3-233 Capacity Analysis for P073 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	7,200	0
Overall Total:	7,200	0

Table 3-234 Capacity Analysis for P087 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Thermal Recovery	2,600	0
Overall Total:	2,600	0

3.6 Gases P076, P078 and U115

RCRA hazardous waste P076 (nitric oxide) and P078 (nitrogen dioxide) are listed for acute toxicity. RCRA hazardous waste U115 (ethylene oxide) is listed for toxicity. For P076 and P078 wastewaters and nonwastewaters, EPA is promulgating venting into a reducing medium as the method of treatment. For U115, EPA is promulgating thermal or chemical oxidation as methods of treatment for nonwastewaters, and incineration, chemical oxidation followed by carbon adsorption, or wet-air oxidation followed by carbon adsorption as methods for wastewaters.

Table 3-325 presents the deepwell disposed volumes of U115 wastewaters requiring alternative treatment capacity for this rulemaking. In the proposed rule, EPA stated that it did not believe that U115 wastes were being deepwell-injected. During the public comment period, commenters indicated that U115 is deepwell-injected. EPA has reviewed these data and agrees. Based on the data set, EPA has identified that there is adequate capacity for the deepwell-injected volume of U115 wastewaters requiring alternative treatment. Therefore, EPA is not granting a two-year national capacity variance for this waste. No deepwell-injected or surface-disposed volumes of P076 or P078, and surface disposal U115 were reported in the data set. Therefore, EPA is not granting a variance for wastes.

Table 3-235 Capacity Analysis for U115 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Liquids	0	8,000,000
Overall Total:	0	8,000,000

3.7 P and U Waste Codes Containing Cyanides P031, P033, and U246

RCRA hazardous wastes P031 (Cyanogen), P033 (Cyanogen chloride), and U246 (Cyanogen bromide) are listed for their toxicity. EPA is promulgating incineration, chemical oxidation, or wet-air oxidation as methods of treatment for amenable and total cyanides for both wastewater and nonwastewater forms of these three wastes. EPA is promulgating a technology rather than concentration-based standards because of the high toxicity of these wastes and the imprecision of the analytical method for these wastes.

The quantity of surface-disposed P031 requiring alternative treatment is shown in Table 3-236 as being treated by the BDAT technology. Based on the data set, EPA has identified that there is sufficient treatment capacity for surface-disposed P031. Therefore, EPA is not granting a national capacity variance for this waste.

Analysis of the data set revealed no deepwell-injected volumes of P031, P033, and U246 wastes or surface-disposed P033 and U246 wastes requiring alternative treatment capacity for this rulemaking. Therefore, EPA is not granting a national capacity variance for these deepwell-injected and surface-disposed wastes.

Table 3-236 Capacity Analysis for P031 (Excluding Soil and Debris)

Type of Alternative Treatment/Recovery	Surface-disposed Volume Requiring Alternative Capacity (gallons/year)	Deepwell Disposed Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:		
Incineration of Solids	191	0
Overall Total:	191	0

3.8 Contaminated Soils

Because of the unique treatability and regulatory issues associated with contaminated soils, such soils have been handled separately in this document. Table 3-237 presents estimates based on TSDR Survey data of the total volume of contaminated soils land disposed at Subtitle C facilities, as well as a breakdown of the total volume land disposed per regulatory group, including the waste affected by today's final rule. Contaminated soils were identified by the waste description code associated with each waste stream and do not include contaminated debris unless specifically indicated by the facility. The TSDR Survey contains data only on the volume of contaminated soils land disposed, not on the volume generated. Furthermore, no data are available on the source generating the waste volume being land disposed (e.g., corrective actions, spill cleanups, etc.). Appendix F presents the results of the analysis of required capacity for each alternative technology for contaminated soils.

Available capacity was first assigned to the nonsoil land disposed wastes analyzed in this document (i.e., solvent, HOCs, First Third promulgated wastes, Second Third promulgated wastes, and Third Third proposed wastes). The remaining capacity was then used as available capacity for contaminated soils. Table 3-238 presents the results of the capacity analyses conducted for soils contaminated with proposed Third Third wastes. Tables 3-239 through 3-314 present waste code-by-waste code analysis of the treatment capacity required by soils contaminated with promulgated Third Third wastes.

Analysis of the TSDR Survey data indicated that relatively small volumes of soil contaminated with promulgated Third Third wastes were land disposed in 1986. However, the Superfund remediation program has expanded significantly since that time. An incineration capacity analysis conducted by EPA (Ref. 12)[1] indicates that the amount of contaminated soils being sent to off-site incineration will probably be higher in 1989 and 1990 than in 1986. This capacity analysis was based on information from the EPA Hazardous Site Control

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[1] Versar. 1989. Analysis of incineration capacity requirements for contaminated soils from CERCLA remedial action sites. Prepared for the Office of Solid Waste. Washington, D.C.: U.S. Environmental Protection Agency.

Division (Ref. 13)[2] EPA believes that capacity is still inadequate for incineration of soils contaminated with Third Third wastes because of the major increase in the Superfund remediation program. The analysis of combustion capacity for sludges and solids indicates that capacity has increased significantly in 1990. However, much of the new available capacity is for reuse as fuel at kilns, and thus would not be appropriate for soil and debris. Specifically, the analysis of 1986 land disposal of soil and debris indicates that about 8 million gallons of Third Third wastes needing incineration were land disposed. Analysis of Superfund plans indicated an additional 6 to 60 million gallons of wastes needing commercial incineration, depending on use of on-site versus off-site incineration capacity. (If only ten percent of wastes is sent off-site, six million gallons of capacity are needed, if 100 percent is sent off-site the demand for commercial capacity could increase to 60 million). The analysis of available combustion capacity, after providing for Third Third wastes not receiving a variance, is 22 million gallons. However, most of this capacity is for reuse as fuel at cement kilns and appropriate for soil and debris. Therefore, EPA is granting a two-year national capacity variance from the effective date of this rule for soils contaminated with certain First, Second, and Third Third wastes requiring incineration.

In addition to incineration, capacity shortfalls also exist for contaminated soils whose treatment standard is based on mercury retorting, or vitrification. Consequently, EPA is granting a two-year national capacity variance to soils contaminated with certain First, Second, and Third Third wastes whose BDAT is based on mercury retorting, or vitrification.

EPA has established an inorganic solids debris treatability group based on the comments received, which requested clarification on the appropriate treatment for D004 through D011 characteristic metal wastes that are identified as slags, glass, concrete, bricks, and other inorganic solid debris. Wastes in this treatability group are defined as follows: nonfriable inorganic solids that are incapable of passing through a 9.5-mm standard sieve that require crushing, grinding, or cutting in mechanical sizing equipment prior to stabilization, limited to the following inorganic or metal materials: (1) metal slags (either dross or scoria); (2) glassified slag; (3) glass; (4) concrete (excluding cementitious or pozzolanic stabilized hazardous wastes); (5) masonry and refractory bricks; (6) metal cans, containers, drums, or tanks; (7) metal nuts, bolts, pipes, pumps, valves, appliances, or industrial equipment; and (8) "scrap metal" according to 40 CFR 261.1(c)(6).

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[2] Booz-Allen & Hamilton Inc. 1988. Waste volume remediation analysis summary tables. Memorandum to USEPA, Hazardous Site Control Division, from Booz-Allen & Hamilton Inc. July 4, 1988.

Total volume of debris contaminated with D004 through D011 wastes, according to the TSDR Survey, is approximately 2.2 million gallons/year. There is no classification in the TSDR Survey for inorganic solids debris. However, the comment letters EPA received indicated that the volume of these wastes is significant. Because there is inadequate treatment capacity for inorganic solid debris contaminated with D004 through D011 wastes, EPA is granting a national capacity variance for these wastes.

Table 3-237 Volume of Contaminated Soils Land Disposed

Regulatory Group	Land disposed volume (million gal/yr)
Solvents	26
First Third promulgated wastes	18
HOCs containing soft hammer First Third wastes	2
All other HOC wastes	4
Second Third promulgated wastes	2
Third Third wastes	12
All RCRA wastes	64

Table 3-238 Summary of Capacity Analysis for Third Third Promulgated Soil and Debris Wastes (millions of gallons/yr.)[a]

Technology	Available Capacity	Required Capacity	Variance
Alkaline Chlorination	<1	<1	No
Beryllium Recovery	<1	<1	No
Chemical Oxidation Followed By Chromium Reduction and Chemical Precipitation	<1	<1	No
Chromium Reduction and Chemical Precipitation	47	2	No
Incineration of Sludge/Solids	0	8	Yes
Inorganic Solids Debris Treatment	0	2	Yes
Mercury Retorting	<1	4	Yes
Neutralization	14	<1	No
Secondary Smelting	35	<1	No
Stabilization	301	12	No
Vitrification	0	<1	Yes

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[a] Volumes include First and Second Third soft hammer waste, and multi-source leachate.

Table 3-239 Capacity Analysis for D001a (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	1,489,128
Subtotal for BDAT:	1,489,128
Quantities Included in Mixtures and Assigned to Additional Technology:	
Stabilization of Soil/Debris	27
Vitrification of Soil/Debris	576
Subtotal for non-BDAT:	603
Overall Total:	1,489,731

D001a is D001 ignitables

Table 3-240 Capacity Analysis for D002a (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	2,400
Neutralization of Soil/Debris	23,401
Subtotal for BDAT:	25,801
Quantities Included in Mixtures and Assigned to Additional Technology:	
Chromium Reduction and Chemical Precipitation of Soils	142,939
Mercury Retorting of Soil/Debris	60
Stabilization of Soil/Debris	2,787
Vitrification of Soil/Debris	680
Subtotal for non-BDAT:	146,466
Overall Total:	172,267

D002a is D002 acids and alkalines

Table 3-241 Capacity Analysis for D003c (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Chem. Oxidation Followed by Chromium Reduction and Chem. Precipitation of soils	130,080
Subtotal for BDAT:	130,080
Quantities Included in Mixtures and Assigned to Additional Technology:	
Incineration of Soil/Debris	3,160
Subtotal for non-BDAT:	3,160
Overall Total:	133,240

D003c is D003 reactives

Table 3-242 Capacity Analysis for D012 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	164,958
Overall Total:	164,958

Table 3-243 Capacity Analysis for D013 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	381,892
Overall Total:	381,892

Table 3-244 Capacity Analysis for D004 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Vitrification of Soil/Debris	469,597
Subtotal for BDAT:	469,597
Quantities Included in Mixtures and Assigned to Additional Technology:	
Chromium Reduction and Chemical Precipitation of Soils	88,512
Incineration of Soil/Debris	1,051
Subtotal for non-BDAT:	89,563
Overall Total:	559,160

Table 3-245 Capacity Analysis for P011 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Vitrification of Soil/Debris	2,880
Subtotal for BDAT:	2,880
Quantities Included in Mixtures and Assigned to Additional Technology:	
Stabilization of Soil/Debris	0
Overall Total:	2,880

Table 3-246 Capacity Analysis for P012 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Vitrification of Soil/Debris	56,400
Subtotal for BDAT:	56,400
Quantities Included in Mixtures and Assigned to Additional Technology:	
Incineration of Soil/Debris	27
Stabilization of Soil/Debris	0
Subtotal for non-BDAT:	27
Overall Total:	56,427

Table 3-247 Capacity Analysis for D005 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	1,791
Stabilization of Retort Slag (Soils)	12,252
Stabilization of Soil/Debris	273,833
Subtotal for BDAT:	287,876
Quantities Included in Mixtures and Assigned to Additional Technology:	
Chromium Reduction and Chemical Precipitation of Soils	209,811
Mercury Retorting of Soil/Debris	1,140
Vitrification of Soil/Debris	40,610
Subtotal for non-BDAT:	251,561
Overall Total:	539,437

Table 3-248 Capacity Analysis for D006a (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Stabilization of Retort Slag (Soils)	6,699
Stabilization of Soil/Debris	250,461
Stabilization of Wastewater Treatment Sludge and Soils	67,788
Subtotal for BDAT:	324,948
Quantities Included in Mixtures and Assigned to Additional Technology:	
Chromium Reduction and Chemical Precipitation of Soils	336,396
Incineration of Soil/Debris	12,906
Mercury Retorting of Soil/Debris	5,024
Vitrification of Soil/Debris	43,095
Subtotal for non-BDAT:	397,421
Overall Total:	722,369

D006a is D006 cadmium non-batteries

Table 3-249 Capacity Analysis for D007a (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Chromium Reduction and Chemical Precipitation of Soils	982,669
Stabilization of Retort Slag (Soils)	6,699
Stabilization of Soil/Debris	27,856
Stabilization of Wastewater Treatment Sludge and Soils	70,277
Subtotal for BDAT:	1,087,501
Quantities Included in Mixtures and Assigned to Additional Technology:	
Incineration of Soil/Debris	63,646
Mercury Retorting of Soil/Debris	5,084
Vitrification of Soil/Debris	104,466
Subtotal for non-BDAT:	173,196
Overall Total:	1,260,697

D007a is D007 chromium

Table 3-250 Capacity Analysis for D007b (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Thermal Recovery of Chromium Bricks	3,000,000
Overall Total:	3,000,000

D007b is D007 chromium refractory bricks

Table 3-251 Capacity Analysis for U032 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Stabilization of Soil/Debris	1,440
Stabilization of Wastewater Treatment Sludge and Soils	6,998
Overall Total:	8,438

Table 3-252 Capacity Analysis for D008a (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Stabilization of Soil/Debris	9,631,111
Stabilization of Wastewater Treatment Sludge and Soils	85,683
Subtotal for BDAT:	9,716,794
Quantities Included in Mixtures and Assigned to Additional Technology:	
Chromium Reduction and Chemical Precipitation of Soils	382,315
Mercury Retorting of Soil/Debris	441,212
Vitrification of Soil/Debris	89,344
Subtotal for non-BDAT:	912,871
Overall Total:	10,629,665

D008a is D008 lead non-batteries

Table 3-253 Capacity Analysis for D008b (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Secondary Smelting of Soils	59,162
Overall Total:	59,162

D008b is D008 lead acid batteries

Table 3-254 Capacity Analysis for P110 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Stabilization of Soil/Debris	480
Overall Total:	480

Table 3-255 Capacity Analysis for U144 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Stabilization of Soil/Debris	267
Overall Total:	267

Table 3-256 Capacity Analysis for D009a (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Mercury Retorting of Soil/Debris	3,051,369
Subtotal for BDAT:	3,051,369
Quantities Included in Mixtures and Assigned to Additional Technology:	
Chromium Reduction and Chemical Precipitation of Soils	5,370
Vitrification of Soil/Debris	17,699
Subtotal for non-BDAT:	23,069
Overall Total:	3,074,438

D009a is D009 high concentration mercury

Table 3-257 Capacity Analysis for K106a (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Mercury Retorting of Soil/Debris	9,600
Overall Total:	9,600

K106a is K106 high concentration mercury

Table 3-258 Capacity Analysis for U151a (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Mercury Retorting of Soil/Debris	4,242
Subtotal for BDAT:	4,242
Quantities Included in Mixtures and Assigned to Additional Technology:	
Stabilization of Soil/Debris	80
Subtotal for non-BDAT:	80
Overall Total:	4,322

U151a is U151 high concentration mercury

Table 3-259 Capacity Analysis for D010 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Stabilization of Soil/Debris	6,694
Overall Total:	6,694

Table 3-260 Capacity Analysis for D011 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Included in Mixtures and Assigned to Additional Technology:	
Vitrification of Soil/Debris	51
Overall Total:	51

Table 3-261 Capacity Analysis for F019 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Alkaline Chlorination of Soils	59,994
Stabilization of Soil/Debris	29,997
Stabilization of Wastewater Treatment Sludge and Soils	6,400
Overall Total:	96,391

Table 3-262 Capacity Analysis for U051 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	1,881,258
Stabilization of Soil/Debris	1,862,445
Overall Total:	3,743,703

Table 3-263 Capacity Analysis for K035 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	310,560
Overall Total:	310,560

Table 3-264 Capacity Analysis for U044 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	382
Overall Total:	382

Table 3-265 Capacity Analysis for U080 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	4,419
Overall Total:	4,419

Table 3-266 Capacity Analysis for U228 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	44,280
Overall Total:	44,280

Table 3-267 Capacity Analysis for P037 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	403
Overall Total:	403

Table 3-268 Capacity Analysis for P051 (Soil and Debris only)

Type of Alternative Treatment/Recqvery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	87,211
Overall Total:	87,211

Table 3-269 Capacity Analysis for P123 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	477
Overall Total:	477

Table 3-270 Capacity Analysis for U036 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	877
Overall Total:	877

Table 3-271 Capacity Analysis for U070 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	480
Incineration of Soil/Debris	480
Overall Total:	

Table 3-272 Capacity Analysis for U060 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	17,149
Overall Total:	17,149

Table 3-273 Capacity Analysis for U061 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	17,178
Overall Total:	17,178

Table 3-274 Capacity Analysis for U129 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	403
Overall Total:	403

Table 3-275 Capacity Analysis for U019 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	131,001
Overall Total:	131,001

Table 3-276 Capacity Analysis for U220 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	312,619
Overall Total:	312,619

Table 3-277 Capacity Analysis for U239 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	290,492
Overall Total:	290,492

Table 3-278 Capacity Analysis for U022 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	461
Overall Total:	461

Table 3-279 Capacity Analysis for U050 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	461
Overall Total:	461

Table 3-280 Capacity Analysis for U120 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	461
Overall Total:	461

Table 3-281 Capacity Analysis for U165 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	438,098
Overall Total:	438,098

Table 3-282 Capacity Analysis for P020 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	50,880
Overall Total:	50,880

Table 3-283 Capacity Analysis for P047 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	8,625
Overall Total:	8,625

Table 3-284 Capacity Analysis for P048 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	1,920
Overall Total:	1,920

Table 3-285 Capacity Analysis for U052 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	617,510
Subtotal for BDAT:	617,510
Quantities Included in Mixtures and Assigned to Additional Technology:	
Stabilization of Soil/Debris	10,930
Subtotal for non-BDAT:	10,930
Overall Total:	628,440

Table 3-286 Capacity Analysis for U188 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	470,942
Overall Total:	470,942

Table 3-287 Capacity Analysis for U002 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	22,999
Overall Total:	22,999

Table 3-288 Capacity Analysis for U008 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	95,203
Overall Total:	95,203

Table 3-289 Capacity Analysis for U031 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	602
Overall Total:	602

Table 3-290 Capacity Analysis for U108 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	720
Overall Total:	720

Table 3-291 Capacity Analysis for U118 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	180
Overall Total:	180

Table 3-292 Capacity Analysis for U122 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	27,128
Overall Total:	27,128

Table 3-293 Capacity Analysis for U123 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	1,677
Overall Total:	1,677

Table 3-294 Capacity Analysis for U125 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	4,320
Overall Total:	4,320

Table 3-295 Capacity Analysis for U147 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	1,200
Overall Total:	1,200

Table 3-296 Capacity Analysis for U154 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	7,440
Overall Total:	7,440

Table 3-297 Capacity Analysis for U159 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	375,972
Overall Total:	375,972

Table 3-298 Capacity Analysis for U161 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	7,440
Overall Total:	7,440

Table 3-299 Capacity Analysis for U162 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	127,981
Overall Total:	127,981

Table 3-300 Capacity Analysis for U248 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	480
Overall Total:	480

Table 3-301 Capacity Analysis for P054 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	1,200
Overall Total:	1,200

Table 3-302 Capacity Analysis for P064 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	5,050
Overall Total:	5,050

Table 3-303 Capacity Analysis for U003 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	720
Overall Total:	720

Table 3-304 Capacity Analysis for U009 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	221,211
Overall Total:	221,211

Table 3-305 Capacity Analysis for U105 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	11,398
Overall Total:	11,398

Table 3-306 Capacity Analysis for U106 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	10,920
Overall Total:	10,920

Table 3-307 Capacity Analysis for U181 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	315
Overall Total:	315

Table 3-308 Capacity Analysis for P022 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	138,720
Overall Total:	138,720

Table 3-309 Capacity Analysis for P070 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	437,520
Overall Total:	437,520

Table 3-310 Capacity Analysis for U114 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	4,347
Overall Total:	4,347

Table 3-311 Capacity Analysis for P108 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	5,625
Overall Total:	5,625

Table 3-312 Capacity Analysis for U103 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	1,863
Overall Total:	1,863

Table 3-313 Capacity Analysis for P122 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Incineration of Soil/Debris	960
Subtotal for BDAT:	960
Quantities Included in Mixtures and Assigned to Additional Technology:	
Stabilization of Soil/Debris	0
Overall Total:	960

Table 3-314 Capacity Analysis for P015 (Soil and Debris only)

Type of Alternative Treatment/Recovery	Volume Requiring Alternative Capacity (gallons/year)
Quantities Assigned to BDATS or Equivalents:	
Thermal Recovery from Soils	1,440
Overall Total:	1,440